ISSN:2394-2517

Sameeksha

Volume.NO. I 2025 ISSUE NO. 7 Sameeksha ISSN:2394-2517

Sameeksha

International Journal of Commerce, Economics And Management

Indira College of Commerce and Science
89/2A, "DHRUV" New Pune Mumbai Highway
Tathwade, Pune-11033, Maharashtra, India
Phone : 91 -20-66759637/ 646
Website : www.iccs.ac.in

Volume. I Issue. 7 ISSN: 2394-2517

Sameeksha

International Journal of Commerce, Economics and Management

Editor-in-Chief
Dr. Wani Nalanda D.

Executive Editor
Dr. Thomson Varghese

INDIRA

Indira College of Commerce and Science

89/2A, "DHRUV", New Pune Mumbai Highway, Tathwade,Pune–411033,
Maharashtra, India

First Impression: 2014
Second Impression: 2016
Third impression 18th December, 2018
Fourth impression 19th December, 2019
Fifth impression 12th April 2023
Sixth Impression 28th FEB 2024
Seventh Impression 25 th Jan 2025

SAMEEKSHA International Journal of Commerce, Economics and Management

Vol. 1⌘ Issue 7 ⌘ 2025

ISSN: 2394-2517

Printed and Published By :

Success Publications
Radha Krisna Apartment, 535, Shaniwar
Peth, Opp.Prabhat Theatre, Pune - 411030.
Contact -9422025610, 020-24433374
Website- www.sharpmultinational.com

For
Indira College of Commerce and Science, Pune.

Foreword

Shri. Ganesan Ramaswamy
Chief Financial Officer
Wadia Group's Modern Education Society Pune.
Savitribai Phule Pune University

It is my great pleasure to congratulate the management and convenor Dr. Nalanda Wani, and the editorial team. on the successful organization of the National Conference and for publishing the 7th edition of double blind, peer reviewed, annual International Journal, '**Sameeksha'**. I am confident that this premier gathering of scholars, researchers, and industry experts in the field of commerce, economics and management will bring together the brightest minds from around the country to share their cutting-edge research, innovative ideas, and visionary perspectives.

The 'Sameeksha' Journal is a testament to the power of collaboration, intellectual curiosity, and the pursuit of excellence. The papers and presentations featured in this collection represent the latest advancements in commerce and management, tackling complex challenges, and exploring new frontiers.

As we navigate the complexities IT revolution, the importance of interdisciplinary research and knowledge sharing cannot be overstated. The 'Sameeksha' Conference serves as a vital platform for fostering dialogue, facilitating innovation, and inspiring future generations of researchers and leaders.

I congratulate all the authors, reviewers, organizers, and attendees who have contributed to the success of this event. Your dedication, expertise, and passion for advancing knowledge are what make this conference and journal truly exceptional.

I hope that the insights, discoveries, and discussions presented in this collection will inspire, inform, and motivate you to continue pushing the boundaries of human knowledge and understanding.

Sincerely,

Ganesan Ramaswamy

SAMEEKSHA

International Journal of

Commerce, Economics and Management [SIJCEM]

(A Double Blind, Peer Reviewed Annual Journal)

Members of Advisory Board

Editorial Team Message

“Just as fire is known by its own light, so too is the truth known through reasoning and analysis." — Nyaya Sutra 1.1.13

Research is the pathway for diligent investigation and critical thinking that ultimately helps us to make informed decisions. Fire helps to reveal the unknown, similarly research can guide us to truth and illuminates the path and dispels the shadow of uncertainty.

Every issue of “Sameeksha”- the International Journal of Commerce Management and Social Science Indira College of Commerce and Science has been an attempt to promote research culture. The publication of 7th edition of Sameeksha, is one such step encouraging individuals to seek out new information, question existing paradigms, and explore diverse perspective in the pursuit of transformation and change. Our endeavour, through this scholarly journal is to fuel not only academic and professional growth but also drive societal progress by addressing complex challenges and uncovering novel solutions. We are extremely delighted and proud of our board members and fortunate to be able to draw upon their individual and collective knowledge, bent, judgement, and disciplinary backgrounds to engage in the research process. Their constant guidance, support, feedback has helped us in completion of our venture. The journey is interesting and an enormous amount of work underwent in making this journal, is reflected in this edition.

The journal “Sameeksha embodies the collective thinking of a group of innovative individuals with whom we are truly honoured to work. It is a platform for scholars, researchers, and academicians to express their innovative and creative ideas to aim for higher learning. We are happy to have participation of authors from various disciplines with an effort to validate near-term practical contributions that take a constructive approach to solve many real-world problems. The rapid technological advancements and artificial intelligence (AI) have heralded a sea change across sectors, altering the way we live, communicate and work with unprecedented levels of automation. With this massive progress, we can see a sea change in the Commerce, Management and Social Science scenario in India and across borders. This reflection is seen in the current issue of Sameeksha, The International Journal of Commerce, Economics & Management.

At this stage, we would like to place on record, our gratitude towards our Patrons for their tireless support and constant motivation. Our sincere thanks are also due, to the various other agencies for their support, to the authors for their trust and tireless effort to make it happen.

Sameeksha Team

CONTENT

THE DAWN OF CUSTOMIZATION: A REVIEW ON THE ARTIFICIAL INTELLIGENCE ROLE IN COSMETIC CONSUMERISM

Ms. Sarika. A. Nirmal
Research Scholar,
Research Centre in Commerce and Management, Indira College of Commerce and Science, and Assistant Professor, Department of Computer Science, Indira College of Commerce and Science, Pune.
sarika.thakare@iccs.ac.in

Dr. Nalanda Wani
Research Guide,
Research Centre in Commerce and Management, Indira College of Commerce and Science, and Head of the Department, Commerce, Indira College of Commerce and Science, Pune.
nalanda.wani@iccs.ac.in

Abstract:

This research aims to investigate into the new area of artificial intelligence, especially regarding the introduction of customised solutions in the cosmetics sector and its possible consequences for consumer behaviour. This study is well placed in the moment where the cosmetic industry has reached a technological threshold that necessitates research on how AI customization may change consumer expectations and preferences, buying behaviour, among others. The paper begins with setting the context on when AI first started appearing within the cosmetic industry and contrasts this with similar successful applications across other industries. A thorough review of existing literature and emerging market trends helps to determine how areas such as colour-matching technologies, product recommendation systems and customized skincare regimens are impacted in cosmetic consumerism by AI.

The study looks deeper into the psychological aspects of consumer responses toward AI-customized products in terms of understanding how factors like trust in AI recommendations, the perceived efficacy of a customized product and the newness of experiences through AI influences buying decisions. The paper will address how customization and privacy can be balanced and the ethics and the private considerations surrounding the use of consumer data in artificial intelligence algorithms.

This research gives an idea about "The Dawn of Customization" an eye on what artificial intelligence can do in relation to changing the very fabric of cosmetic consumption forward. It shows that AI-based customization is no fad but a profound change in how consumers interact with beauty products. In conclusion, it presents implications on the cosmetic brand, marketers and technologists regarding a need for collaborative development of AI potential to be deployed for creating more consumer-centric experiences in beauty. This research further sets up space for more empirical work and further calls attention to the fact that understanding AI-customization nexus will pave the future path of the cosmetics industry.

Keywords: Artificial Intelligence, Cosmetic Industry, Consumer Behaviour, Customization, Product Recommendation Systems, Customized Skincare, Technology in Cosmetics, Market Trends, AI-Driven Marketing.

1. INTRODUCTION

The cosmetic industry, in itself an historical manifestation of enhancing the appearance of humans, has taken a turn in its very trajectory with Artificial Intelligence. A leap that would go beyond being technological in character is a change of cultural and commercial orientation towards reshaping how the consumer goes about his engagement with beauty products and services (Smith & Linden, 2021). This is the beginning of a time when consumers consider customization to be a necessity rather than a luxury (Jones, 2020). "The Dawn of Customization: Anticipating AI's Role in Cosmetic Consumerism" explores and predicts how consumer behaviour will be affected by AI-driven customization in cosmetics.

The idea of customisation in cosmetics, which was previously limited to a few products and services, is today being expanded and redefined by AI technology. AI algorithms can evaluate large datasets to generate customized skincare regimens, product recommendations and even custom-made products (Davis & Patterson, 2019). This level of customization is changing the consumer experience, leading to more informed and tailored choices (Martin, 2018). As consumers learn about their respective needs and personal preferences, here is where the AI plays the most important role of giving solutions.

More significantly, AI not only influences how consumers choose what to buy, but also at the psychological levels. Trust in the AI system is also a component that influences perceptions of product effectiveness and overall satisfaction with the degree of customization provided (Wilson & Daugherty, 2018). This interplay of psychological effects with AI presents an interesting study. However, despite the benefits derived from the incorporation of AI into cosmetics, such use raises numerous ethical and privacy concerns. This includes how the personal data and consent of clients are handled while being transparent on the operations being carried out using AI (Brown & Michael, 2020).

In light of the above changes, the Rise of Customization" tries to offer an expansive analysis of what is taking place with AI on the front end of cosmetic consumption. With research on present patterns, consumer perspective and underpinning of AI in cosmetics, this research paper looks for useful inputs towards brands, marketers and technology providers. In conclusion, this research not only adds to the scholarly literature on AI in consumer markets but also provides an industry practitioner guide on the new landscape of AI-driven customization (Smith & Linden, 2021; Jones, 2020).

2. RESEARCH OBJECTIVES

- To synthesize existing research on AI-driven customization in cosmetics.
- To investigate the use of artificial intelligence in the cosmetics industry.
- To find out how customers react to AI customization.
- Highlight advancements in AI technologies for cosmetic consumerism
- To Understand the potential and difficulties that artificial intelligence presents for cosmetics.
- To identify research gaps and future directions

3. RESEARCH METHODOLOGY

In this research paper, it clarifies the role of artificial intelligence in the beauty industry and how this, in turn, impacts consumer behaviour. To study it, both qualitative and quantitative methodologies can be used in the methodology which are as follows:

a) Literature Review:

Researcher can carry out an extensive literature review to comprehend the current scenario of AI in the cosmetic industry, consumer behaviour theories and previous researches on technology-driven customization. The sources for the literature review can be academic journals, industry reports, case studies and relevant books.

b) Survey Research:

Researcher can collect perception, attitude and behaviour towards AI-customized cosmetic product information from diversified consumers by designing and distributing the survey and can discuss how AI customization influences the buying decision, brand loyalty and product satisfaction.

c) Interviews and Focus Groups

Researcher can conduct interviews of industry experts such as cosmetic brand managers, AI technology developers and marketing professionals for deeper insight into the practicalities of integrating AI. Also can focus groups with consumers to understand their perceptions and experiences of AI-customized cosmetic products in a more conversational and interactive environment.

d) Case Study Analysis

Researcher can perform case studies of pioneering cosmetic brands that have successfully implemented AI-driven customization. And can evaluate the strategies, outcomes, challenges and best practices from these cases.

e) Data Analysis

Researcher can utilize statistical software for quantitative data analysis from surveys, including descriptive statistics and inferential statistics to identify patterns and correlations. Thematic analysis can also be applied to qualitative data from interviews and focus groups to identify common themes and insights.

f) Ethical considerations

Researcher should ensure all research is conducted ethically, with informed consent from participants, confidentiality assurance and adherence to data protection laws.

g) Research Limitations and Validation

Researcher should acknowledge the limitations of the research, such as sample size or potential biases.

Validate findings through triangulation, checking for consistency across different data sources and methods.

This mixed-methods approach allows for a thorough investigation of AI's role in cosmetic consumerism from both consumer and industry perspectives, providing a well-rounded understanding of the subject.

4. STUDY METHODOLOGY

For this research, there is a requirement of the strong methodology required to discuss the introduction of artificial intelligence to the cosmetic industry and its role regarding the consumer. A mixed-method approach can be followed, which includes the qualitative and quantitative research methodologies to provide deep insights. A proposed outline for the methodology is as follows:

1. **Quantitative Research – Surveys:**

   Survey Design and Distribution: Can design a systemic questionnaire to be administered across widely diversified customers of cosmetics. This would include asking them how the use of AI-driven customization for cosmetics was changing people's attitude, choice and purchase behaviour.

   Sampling: It will adopt stratified random sampling, as diversified sampling may differ significantly according to their ages, genders and geographical distribution.

   Data Collection and Analysis: Can collect the responses and then analyse them through statistical software. Descriptive statistics can be used to summarize the data, while inferential statistics (such as regression analysis) can be used in understanding the relationships between variables.

2. **Qualitative Research-Interviews and Focus Groups:**

   Semi-structured Interviews: Interviews with industry experts such as cosmetic brand managers, developers of AI technology and marketing strategists would be conducted to understand the industry's views regarding the integration of AI and how it affects product formulation and consumer engagement.

   Focus Group: A focus group on consumers will help in acquiring even more specific ideas regarding consumer's perception and experiences of AI-customized cosmetics. Qualitative understanding of attitude and decision-making process would be achieved.

   Data Analysis: Transcription of the interviews and the focus groups along with thematic analysis will help the researcher in order to determine recurrent themes and patterns.

3. **Case Studies:**

   Selection and Analysis: Can find the case studies of cosmetic firms that led in market using the help of AI to integrate this in the line of customized products and can try to identify their strategies, issues, results and customers' response

4. **Comparative Approach:**

   Can compare all cases and observe for similarities or variation in approach or the results. It would provide a balanced approach with which AI would be perceived both from the consumer's perspective and the industry's and this would therefore create more insight about what is happening regarding personal experiences in the cosmetics world.

5. LITERATURE REVIEW

Literature reviewed and analysed in relation to AI in the Cosmetic Industry, Trends of Customization and Consumer Expectations, AI-Driven Consumer Behaviour in Cosmetics, Ethical and Privacy concerns with AI use in Cosmetics, Challenges and Opportunities in AI Customization.

AI in Cosmetic Product Innovation (Johnson & Smith, 2021)

According to Johnson and Smith, 2021, AI technology is changing the product innovation in the beauty industry. The authors show how AI is used in formulating new products, predicting trends and making beauty solutions customized for the individual. The paper notes that AI has enhanced the quality of products and speed-to-market as AI analytics enables brands to quickly respond to the consumer's needs and emerging trends.

AI in Skincare Customization (Patel & Kumar, 2020)

Opportunities and Scope". The article of Patel and Kumar, underpin several applications in reference to using AI in formulating a skincare product/industry specialized upon the specifications requirements of its own individualized end-users; thereby, their point has asserted in the regard whereby one scans to suggest appropriate individual-based skincare prescriptions designs through or out of some chosen AI-related algorithm. This paper discusses some efficiency benefits but barely touches the challenge: accuracy of an algorithm and consumer privacy problems.

Customized Makeup Recommendations (Chen & Zhang, 2019)

This is Chen and Zhang's research (2019) on how AI is applied in retail settings specifically in the context of customized makeup. They talk about some of the ways virtual try-on applications, along with personal recommendation systems developed through AI capability, improve the customer experience. The outcome is that in this manner, the customers are satisfied and return to the same place.

AI Driven Consumer Insight in Marketing - Wilson & Daugherty 2018

There is a mention by Wilson and Daugherty that AI-driven insight is changing cosmetics marketing. For them, the data extracted from AI software is used effectively for making sound marketing campaigns. It also finds out the required advertisements and a better product at which point the usage of AI increases the understanding to predict consumer behaviours.

Rise of Customization in Beauty (Davis & Patterson, 2019)

Based on Davis and Patterson, the rise trend of customization in the cosmetic industry needs to be viewed with four AI glasses. They articulated how AI innovations enhance the prospect of more individualistic ways of providing products and even advertisements, which will give a deeper bond with the customer. After all, this paper postulates that AI-driven customization is going to be the critical differentiator in the extremely competitive beauty marketplace.

Consumer Psychology in the Era of Artificial Intelligence by Brown & Michael (2020)

This would be how it will describe the impact of artificial intelligence on consumer psychology in the cosmetic industry, for instance, through AI-driven recommendations and customization of purchase behaviour.

Navigating Ethical Considerations of AI in Cosmetics (Green & Thompson, 2022)

This paper discusses some of the ethical implications surrounding AI in cosmetics, including privacy concerns, bias in the algorithms used and how the use of AI for product formulation or recommendations will impact people.

AI and the Future of Custom Cosmetics (Hughes & White, 2021)

Probably the paper will concentrate on the ongoing trends and future visions relating to the application of AI in customized cosmetics, thereby highlighting how technology may tailor such products according to the needs and preferences of individual customers.

Ethics and privacy matters of AI-driven personal care products (Turner & Evans, 2020)

It identifies the ethics and privacy-related issues of using AI-driven personal care products, including issues like data safety and information pertinent to private issues.

The Impact of AI on Consumer Loyalty in the Cosmetic Sector (Martin, 2018)

This kind of study develops a theme upon the impact AI technology has either on the improvement of experiences or on the very specialized service on customer loyalty that exists within the cosmetic industry.

Customized skincare: Machine learning techniques in cosmetology (Lee & Kim, 2021)

On this topic the author would elaborate in detail on its use to find out individual care for the skin and those several algorithms that have been implemented in cosmetology.

AI in Beauty: Revitalizing Cosmetic Marketing (Rodriguez & Sanchez, 2020)

This revolves around the research on how AI impacts cosmetic marketing industries, maybe digital marketing, consumer participation and brand image.

Role of Artificial Intelligence in Cosmetic Product Development (Gupta & Iyer, 2019)

The authors detailed about how AI is helpful in the development of cosmetic products, concerning material choice, testing and new product lines.

Consumer Perception of AI-based Cosmetics (Thompson & Clark, 2018)

This survey analysis may provide insight into consumer perceptions about AI-based cosmetic products-some views to gain trust, satisfaction and willingness to use such products.

Review of AI-Based Skin Analysis Tools for their Effectiveness (Patel & Rao, 2022)

This might be a paper on the effectiveness of AI-based tools in skin analysis- its accuracy and reliability and their applications in dermatology and skincare practice.

Authors & Year	Role of AI in Consumer Behaviour	Key Findings
Johnson & Smith (2021)	Revolutionizing product innovation in the beauty industry.	AI enhances product quality and speed-to-market, enabling rapid response to consumer demands and trends.
Patel & Kumar (2020)	Personalizing skincare products to individual consumer needs.	AI algorithms analyze skin types and conditions, but challenges include algorithmic accuracy and consumer privacy.
Chen & Zhang (2019)	Offering customized makeup recommendations in retail.	AI-powered tools increase customer satisfaction and loyalty through customization.
Wilson & Daugherty (2018)	Transforming marketing strategies with AI-driven insights.	AI data informs more effective marketing, targeted advertising and product development, predicting consumer behaviour patterns.

Davis & Patterson (2019)	Facilitating customization in product offerings and marketing.	AI-driven customization is a key differentiator in the competitive beauty market.
Brown & Michael (2020)	Influencing consumer behaviour and decision-making in cosmetics.	AI-driven recommendations and customization impact purchasing patterns.
Green & Thompson (2022)	Addressing ethical issues in cosmetics.	Focuses on privacy concerns, bias in AI algorithms and implications for customized products.
Hughes & White (2021)	Customizing cosmetic products to individual needs and preferences.	Highlights current trends and future prospects in AI for cosmetic customization.
Turner & Evans (2020)	Focusing on ethical and privacy concerns in personal care products.	Addresses data security and handling of personal information.
Martin (2018)	Affecting customer loyalty in cosmetics.	Enhances customer experience and customizes services to increase loyalty.
Lee & Kim (2021)	Developing customized skincare solutions through machine learning.	Analyzes various algorithms and their effectiveness in cosmetology.
Rodriguez & Sanchez (2020)	Transforming cosmetic marketing strategies.	Focuses on digital marketing, consumer engagement and brand perception.
Gupta & Iyer (2019)	Assisting in cosmetic product formulation.	Includes ingredient selection, testing and new product creation.
Thompson & Clark (2018)	Understanding consumer perceptions of AI-driven cosmetics.	Survey analysis of trust, satisfaction and willingness to use AI products.
Patel & Rao (2022)	Evaluating the effectiveness of AI-based skin analysis tools.	Assesses accuracy, reliability and practical applications in dermatology and skincare.

6. CONCLUSION

The literature reviewed here is evidence of the strategic role artificial intelligence plays in the transformation of the cosmetic industry. AI is utilized on a variety of vectors, namely: product innovation and formulation, marketing and consumer engagement. Some of the observed trends include how it can apply to recommend consumers with customized skincare and makeup and improve the product quality and efficiency and optimize the marketing strategies towards best matching consumer behaviour. In fact, some of these indicate that AI allows customization of cosmetic products and experience for individual needs of consumers thereby increasing customer satisfaction and loyalty. AI-driven tools, especially in skin analysis and product customization, have been promising in providing more targeted and effective solutions in skincare and cosmetology.

However, this development also comes with its set of new challenges and ethical considerations. Some common themes would be privacy and security of data and whether the algorithms designed for AI systems are reliable or not. This is where delicate ethics in AI usage in recommending customized products as well as product formulation, in relation to the consumer's data, come into play. All these notwithstanding, the bottom line is that AI is transforming the cosmetic industry: an innovative solution that has improved the level of consumer engagement. This innovation comes at a cost though-the need to face the ethical issues and violation of individual's privacy. Accommodating AI in cosmetics would depend on being able to grasp these new capabilities with a strong sense of ethics and trust coming from consumers.

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A COMPARATIVE CASE STUDY ON ZEPTO AND BLINKIT-ANALYSING CUSTOMER PREFERENCES IN THE INDIAN QUICK COMMERCE SECTOR

Ms. Yogita Tukaram Sutar
Asst. Professor,
Department of Commerce, Indira College of Commerce and Science, Pune.
yogita.sutar@iccs.ac.in

Arpita Tripathi
Students of TY BCOM,
Indira College of Commerce and Science, Pune.
arpitatripathi54@gmail.com

Sagar Rajpurohit
[3]Students of TY BCOM, Indira College of Commerce and Science, Pune.

ABSTRACT

The rapid growth of the quick commerce sector in India has led to the emergence of platforms like Zepto and Blinkit, which cater to consumers' growing demand for ultra-fast deliveries of groceries and daily essentials. This research paper presents a comparative case study of Zepto and Blinkit two leading platforms in India’s Quick Commerce Sector which is redefining retail through rapid delivery services. The study investigates customer preferences by conducting a comprehensive survey of urban consumers focusing on critical factors such as product variety, pricing strategies, platform usability, discounts and promotions, delivery speed, delivery charges, value for money, behaviour of delivery boy, 24/7 availability and overall service satisfaction. By analysing these parameters, the paper sheds light on how Zepto and Blinkit cater to evolving customer demands and sustain their competitive edge in a fast-paced market. This study contributes to understanding the evolving consumer preferences in the Indian quick commerce market, providing valuable insights for business strategy and customer engagement.

Key Words – Quick Commerce, Zepto, Blinkit, customer demands, delivery speed, service satisfaction, product quality

INTRODUCTION

Q-commerce (quick commerce, q-com) is a type of online commerce in which goods are delivered quickly, usually in less than 30 minutes. Fulfilment takes place either via a network of small warehouses or via stores, which may be "dark stores," and delivery is with micro-mobility bicycles or motorbikes within a small radius of the picking location. Q-commerce is primarily offered in densely populated urban centers. Typically, offerings are limited to a few fast-moving and high-margin items within a broad assortment.

The quick commerce (Q-commerce) industry in India has seen explosive growth over the past few years, driven by the increasing demand for ultra-fast delivery services of everyday essentials like groceries, snacks, and household products. With the rise of internet penetration, smartphone adoption, and changing consumer behaviours, Indian consumers have increasingly sought convenience, particularly in urban areas where time constraints and busy lifestyles are prevalent. As a result, startups like Zepto and Blinkit have emerged as key players in this space, promising deliveries within minutes, typically ranging from 10 to 30 minutes, thus transforming the landscape of grocery and essential goods shopping in India.

ZEPTO

Zepto is a Mumbai based company that provides 10-minute instant grocery delivery services.

It has doubled its valuation from $225 million to $570 million in less than two months as it expands into newer locations. The startup was founded by two 19-year-old entrepreneurs **Aadit Palicha and Kaivalya Vohra** who left Standford University.

Zepto's tagline says, "Groceries delivered in 10 minutes". Dark Stores support them in achieving this. They are private warehouses located in the location where the demand is high. These warehouses specifically store goods that are often ordered reducing the loss of unsold inventory, Zepto's dark stores are designed to satisfy orders as quickly as possible effectively and efficiently cut down on time.

To ensure a flawless delivery experience, Aadit says that their average delivery time is 8 minutes and 47 seconds. Through a chain of dark stores or retail distribution centers, the Mumbai-based company employs a hotspot method to cater largely to digital purchases.

The company uses AI (Artificial Intelligence) to improve the effectiveness of delivery network by considering factors such as last mile supply availability, weather, population, geography and traffic patterns. There are 200 stores across Bangalore, Mumbai, Hyderabad, Chennai, Pune, Kolkata, Noida, Gurugram, Delhi and Ghaziabad.

BLINKIT

The Gurugram-based Indian on-demand online grocery delivery service Grofers which is now known as Blinkit, was founded in the year 2013. This e-commerce startup platform provides a variety of daily needs products ranging from groceries, bakery items, baby care items, and many more to its customers.

Grofers was founded by two IIT Graduates **Albinder Dhindsa and Saurabh Kumar.** From the mobile application of Blinkit, the customers can buy and order their products at a scheduled time and the Blinkit employees deliver these items to the customers.

"Let’s Blink it" or #letsblinkit is the tagline of Blinkit. Blinkit, which was earlier called Grofers, now has a new mission statement that reads “instant commerce indistinguishable from magic.” It is backed by the food delivery brand Zomato.

Blinkit's primary value proposition lies in its ability to provide a wide range of products, from fresh groceries to non-food items such as household essentials, personal care products, and even electronics. The platform's offerings are stocked through a network of dark stores (small fulfillment centers located in urban neighbourhoods) and local kirana (neighbourhood) stores, enabling rapid order fulfillment. Blinkit has managed to capture a significant portion of the Indian market by focusing on the dual advantages of speed and variety, catering to a broad customer base seeking both convenience and affordability

Blinkit is one of the leading players in India's fast-growing quick commerce market, continuing to innovate and improve its services to stay competitive in an increasingly crowded space.

RELEVANCE OF STUDY

With the increasing demand for instant delivery services understanding the dynamics of Quick Commerce is crucial. Zepto and Blinkit have gained significant attention due to their innovative approaches. This study is relevant because it will provide essential insights into the factors influencing customer choice between Zepto and Blinkit by identifying the key drivers of customer satisfaction—such as delivery speed, product quality, service reliability, and promotions. This study was undertaken to evaluate the strategies, identify gaps and provide insights into how they cater to the evolving needs of urban consumers.

STATEMENT OF PROBLEM

The quick commerce (Q-commerce) sector in India, with platforms like Zepto and Blinkit, has seen significant growth, driven by the demand for fast, on-demand delivery services. However, there is limited research on customer preferences and satisfaction between these platforms. While both focus on providing ultra-fast delivery, it is unclear what factors—such as delivery speed, product variety, customer service, and pricing—influence consumers' choice of platform. Understanding these preferences and identifying the strengths and weaknesses of each platform are crucial for improving service offerings and staying competitive in a rapidly evolving market.

This study aims to fill this gap by conducting a comparative analysis of Zepto and Blinkit, exploring customer satisfaction and identifying key drivers behind platform preference in the Indian quick commerce sector.

OBJECTIVES:

- To compare customer satisfaction and preferences between Zepto and Blinkit.
- To identify the key factors influencing customer preference for each platform.
- To evaluate the strengths and weaknesses of Zepto and Blinkit based on customer feedback

HYPOTHESES

- Zepto's faster delivery time contributes significantly to higher customer satisfaction.
- Blinkit's established brand loyalty provides it with a competitive edge over Zepto
- Customers who prefer Blinkit value product variety and lower prices more than customers who prefer Zepto.
- There is a significant difference in customer satisfaction between Zepto and Blinkit, with Zepto receiving higher satisfaction scores due to its faster delivery and better customer service.

RESEARCH METHODOLOGY

PRIMARY DATA

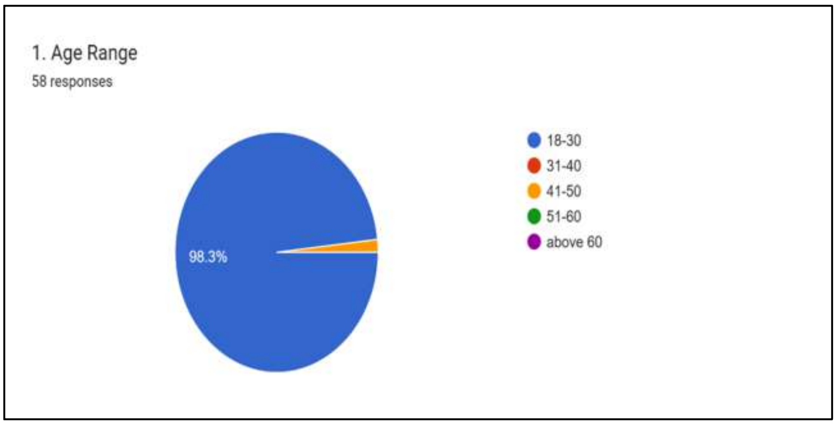
Primary data were collected by using questionnaire method from following:

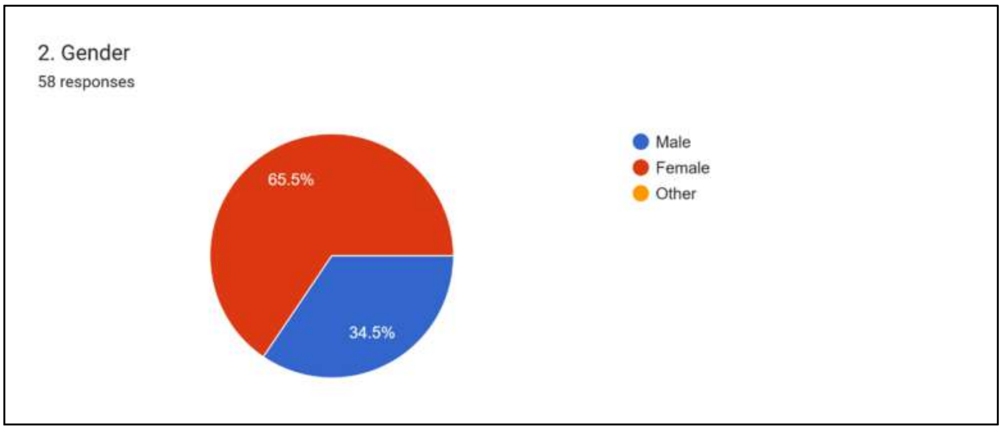
a) Sample size - 58 respondents

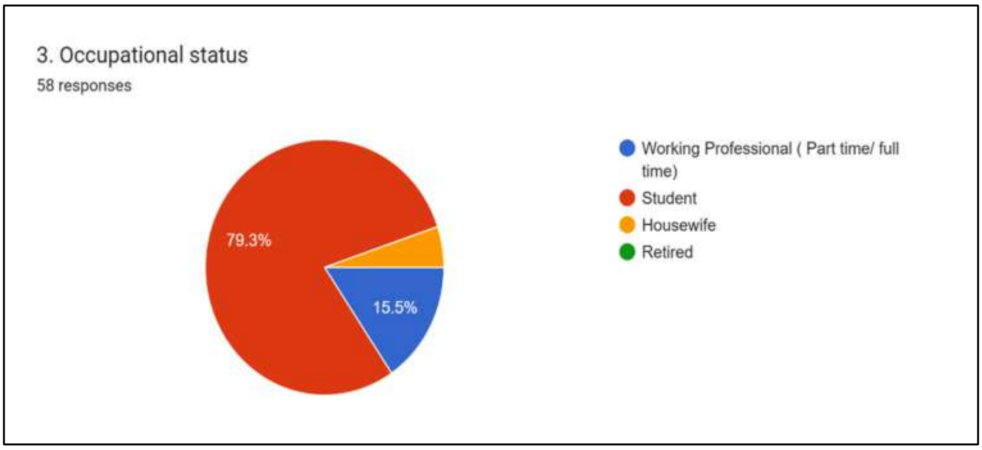
A structured survey targeting users of Zepto & Blinkit to understand their preferences, satisfaction and behaviour.

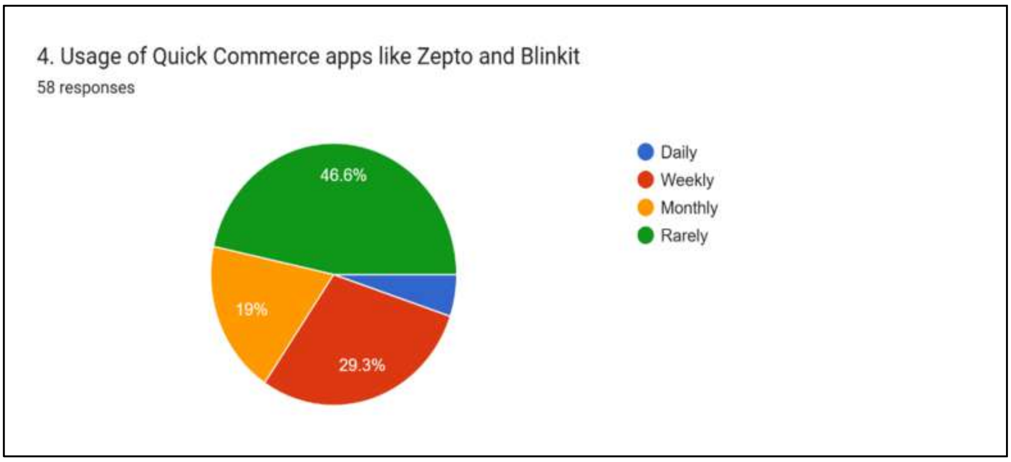
Data collection method- Questionnaire in Google form: Data collection was conducted using a structured questionnaire administered through google forms allowing for efficient and standardized data collection process.

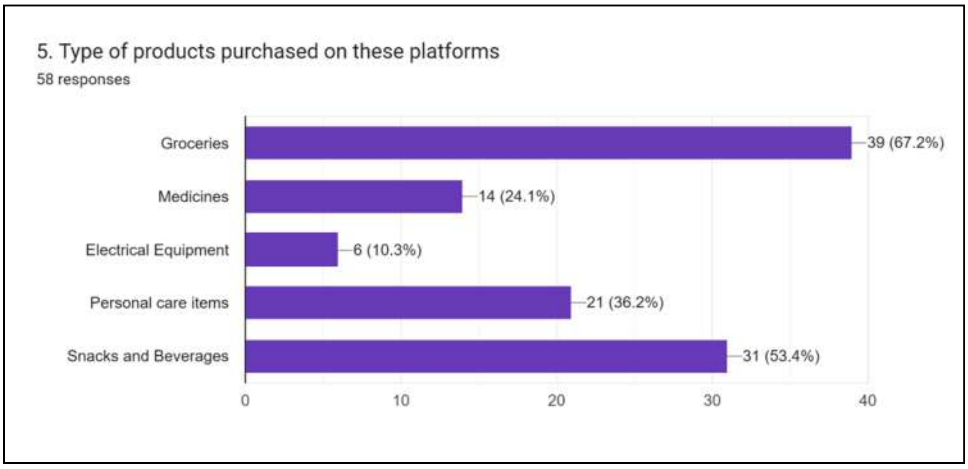
Data collected through survey –

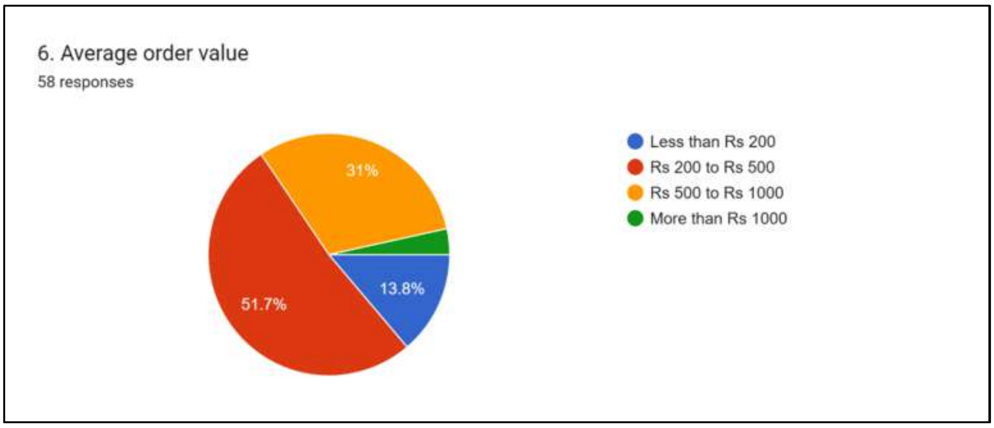


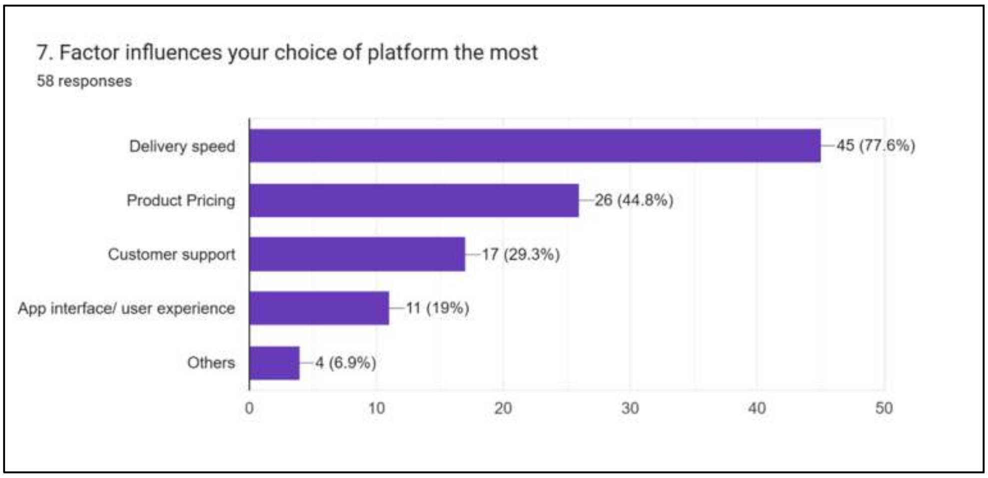


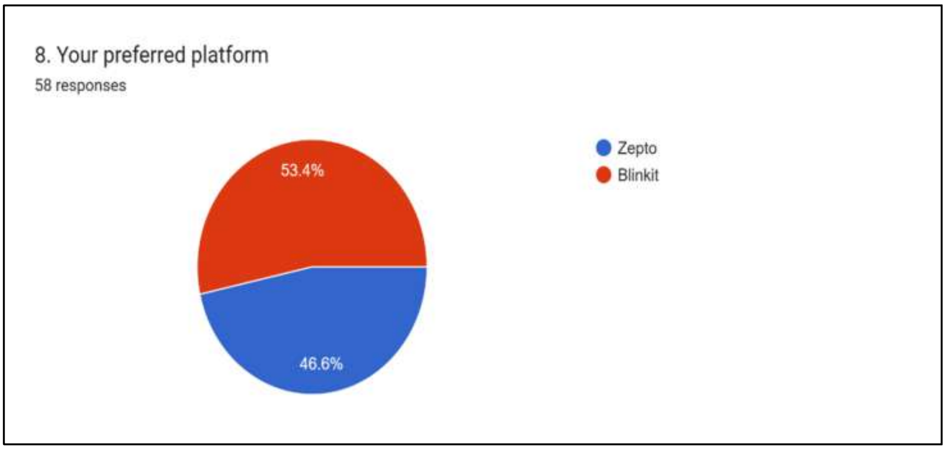


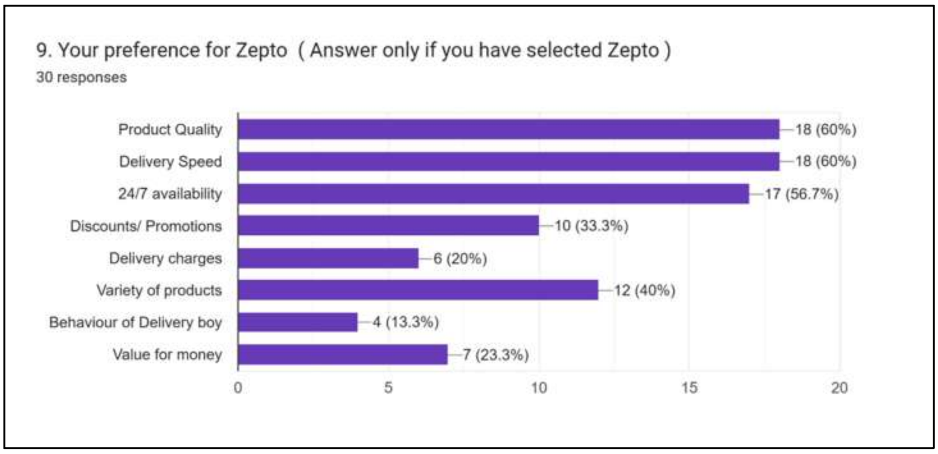


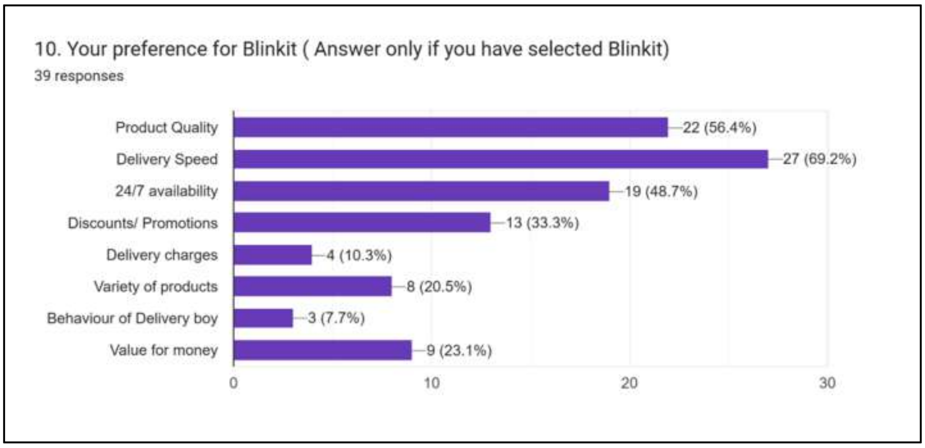

5. Type of products purchased on these platforms
58 responses
Groceries
Medicines
Electrical Equipment
Personal care items
Snacks and Beverages
39 (67.2%)
14 (24.1%)
6 (10.3%)
21 (36.2%)
31 (53.4%)
0
10
20
30
40


6. Average order value
58 responses
31%
51.7%
13.8%
Less than Rs 200
Rs 200 to Rs 500
Rs 500 to Rs 1000
More than Rs 1000


7. Factor influences your choice of platform the most
58 responses
Delivery speed
Product Pricing
Customer support
App interface/ user experience
Others
45 (77.6%)
26 (44.8%)
17 (29.3%)
11 (19%)
4 (6.9%)
0
10
20
30
40
50


8. Your preferred platform
58 responses
53.4%
46.6%
Zepto
Blinkit





ANALYSIS AND FINDINGS

This study is based on the data gathered from 58 respondents

1. **Demographic analysis –**

a) The majority of respondents (98.3%) who participated in the survey were aged between 18-30 years. This suggests that young adults form the primary demographic engaging with quick commerce platforms like Zepto and Blinkit. This age group is likely to prioritize convenience, speed, and ease of access when making purchasing decisions, which could play a significant role in shaping their preferences for Zepto and Blinkit.

b) The survey revealed that 65.5% of the respondents were females, while 34.5% were males. This indicates that females are a significant majority among the user base of quick commerce platforms like Zepto and Blinkit. This could be due to factors such as the convenience of quick deliveries for household and grocery needs, which are traditionally more associated with female shoppers.

c) The majority of respondents (79.3%) identified as students, followed by 15.5% who were working professionals (part time / full time) and 5.2% who were housewives.

This data indicates that students form the largest user segment engaging with quick commerce platforms like Zepto and Blinkit. Their preference for these services could be attributed to their busy schedules, limited time for grocery shopping, and reliance on convenient solutions to meet daily needs.

Working professionals, who account for 15.5% of the respondents, are another critical demographic. Their use of these platforms likely stems from similar time constraints and the need for efficient services. Meanwhile, the 5.2% representation of housewives suggests that this group may find quick commerce platforms useful for fulfilling household requirements quickly and efficiently. This segment could further grow with targeted marketing and service adjustments that address their specific needs such as value-for-money offers.

2. **Frequency of usage**

The survey showed that 46.6% of respondents use quick commerce apps like Zepto and Blinkit rarely, 19% use them monthly, 29.3% use these platforms weekly and 5.2% use these platforms daily. This indicates that while most users rely on these apps occasionally, a significant portion uses them weekly or daily, reflecting their convenience and reliability. Platforms like Zepto and Blinkit could focus on converting rare users into regular ones through targeted offers and improved services.

3. **Type of Products purchased**

67.2% purchase groceries, 53.4% purchase snacks and beverages, 36.2% purchase personal care items, 24.1% purchase medicines, 10.3% purchase electrical equipment.

Groceries and snacks are the most popular categories, while personal care and medicines also see notable demand. Platforms can focus on these high-demand categories to drive sales.

4. **Average order value on Quick Commerce platforms-**

51.7% of the respondents spend Rs 200 to 500 on Zepto and Blinkit platforms, 31% spend Rs 500 to Rs 1000, 13.8% spend less than Rs 200, 3.4% spend more than Rs 1000 on these platforms. This indicates that most users tend to place orders within the ₹200 to ₹1,000 range, with ₹200 to ₹500 being the most common. Orders below ₹200 or above ₹1,000 are less frequent, highlighting a preference for mid-range spending on these platforms.

5. **Influencing factors**

   The survey revealed that the delivery speed influences the choice of platform for 77.6% of the respondents making it the most the critical factor. Product pricing was the second most significant factor affecting 44.8% of users. Customer support was important to 29.3% of the respondents while 19% considered app interface a key factor. A smaller group, 6.9% cited other factors. This emphasizes the pivotal role of delivery speed in driving platform preferences.

6. **Preferred platform-**

   The survey showed that 53.4% of respondents prefer Blinkit, while 46.6% prefer Zepto. This indicates a preference for Blinkit over Zepto among the respondents, suggesting that Blinkit may have a stronger appeal, possibly due to factors like brand loyalty, product range, or customer experience.

7. **Comparison between Zepto and Blinkit**

   The survey results show distinct preferences between Zepto and Blinkit, with each platform excelling in different areas:

a) **Product Quality**:

   56.4% of Blinkit users and 60% of Zepto users prefer these platforms due to product quality, showing that both platforms are considered reliable in providing high-quality products. Zepto holds a slight advantage here.

b) **Delivery Speed**:

   Both platforms are highly rated for delivery speed, but 69.2% of Blinkit users and 60% of Zepto users prioritize this factor. Blinkit holds a slight edge in this regard, making it a strong contender for users seeking rapid delivery.

c) **24/7 Availability**:

   48.7% of Blinkit users and 56.7% of Zepto users appreciate the platforms' availability at all hours. Zepto has a marginal lead in this aspect, ensuring constant access for users.

d) **Discounts and Promotions**:

   33.3% of Blinkit users and 33.3% of Zepto users are motivated by discounts and promotions. Both these platforms provide equal level of satisfaction to customers regarding discounts and promotions.

e) **Delivery charges –**

   Survey results suggest that Zepto has cheaper delivery charges. 20% of Zepto users are concerned about delivery fees, indicating that Zepto offers more affordable delivery compared to Blinkit, where only 10.3% of users mentioned delivery charges.

f) Variety of Products:

20.5% of Blinkit users and 40% of Zepto users appreciate the product variety. Zepto clearly leads in offering a wider range of products.

g) Behaviour of Delivery Boy:

Zepto offers better service in terms of the behaviour of delivery personnel, as 13.3% of Zepto users highlighted it as an important factor, compared to only 7.7% of Blinkit users.

h) Value for Money:

23.1% of Blinkit users and 23.3% of Zepto users find these platforms provide good value for money, where Zepto users show a slightly a higher satisfaction rate in terms of value of money compared to Blinkit users though the difference is minimal.

8. Key Factors influencing platform preference – Zepto v/s Blinkit

a) Reasons for preferring Blinkit

- **Faster Delivery**:

  A significant number of users prefer Blinkit for its quick delivery, with many mentioning deliveries in as little as 8-10 minutes.

- **Convenience and User Experience**:

  Many respondents find Blinkit easy to use, with features like multiple payment options (e-wallets, meal cards, and cash on delivery) making it more convenient.

- **Better Offers and Discounts**:

  Blinkit stands out for offering discounted items and competitive pricing, making it attractive for budget-conscious shoppers.

- **Service Quality**:

  Customers appreciate Blinkit's customer support and service. It is often mentioned that Blinkit is available in more cities and offers better product variety.

b) Reasons for preferring Zepto

- **Ultra-Fast Delivery**:

  Some users prefer Zepto for its fast delivery service and product availability, especially when in urgent need.

- **Attractive Discounts and Offers**:

  Zepto is favoured by users who enjoy its discounts and incentives, including cash wallets for purchases.

- **Product Variety:**

  Several respondents highlighted Zepto's ability to offer a wide range of products that may not be readily available in retail stores, making it a convenient option for some users.

LIMITATIONS OF THE STUDY

1. **Sample Size**:

   The study was conducted among only 58 respondents, which may not fully represent the entire population of users for Blinkit and Zepto, leading to potential biases in the results.

2. **Geographical Limitation:**

   The survey is limited to respondents from Pune region which may not reflect the broader population’s opinions and behaviour. The preferences and behaviours observed may not be applicable across all geographical areas where Blinkit and Zepto operate.

3. **Self-Reporting Bias:**

   The study relies on self-reported data from the respondents, which may introduce biases or inaccuracies, as participants may not always recall their preferences or experiences accurately.

4. **Limited Demographic Diversity**:

   The respondents were primarily from the 18-30 age group and may not reflect the preferences of older users, leading to a skewed representation of the broader user base.

5. **Platform-Specific Bias:**

   Some respondents may have pre-existing preferences or loyalty to one platform, which could influence their responses and potentially distort the comparison between Zepto and Blinkit.

6. **Lack of Long-Term Data:**

   The study focuses on immediate user preferences rather than long-term usage patterns, so it may not capture changing preferences over time or during different seasons or promotions.

CONCLUSION

The comparative analysis of Zepto and Blinkit has provided valuable insights into customer preferences within the quick commerce sector. Based on the survey of 58 respondents, the study highlights key aspects that influence platform choice, customer satisfaction, and overall user experience. Blinkit emerged as the preferred platform for many respondents, primarily due to its faster delivery service, competitive pricing and wide variety of products. Customers favoured Blinkit for its ease of use and discounted offers, making it the go-to option for those seeking convenience and affordability in their shopping experience. Zepto, on the other hand, gained preference for its ultra-fast delivery, with many respondents appreciating its 24/7 availability and promotional deals. Overall, the findings suggest that the key differentiators between Zepto and Blinkit lie in their delivery speed, pricing strategies, product availability, and customer service. As customer expectations continue to grow, both Zepto and Blinkit will need to innovate and adapt to retain their customer base and improve their offerings.

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THE Q-COMMERCE REVOLUTION: TECHNOLOGICAL INNOVATIONS AND MARKET DYNAMICS IN INDIA

Dr. Vinita Shrivastava
Asst. Professor, Department of Commerce, Indira College of Commerce and Science, Pune -33
vinita.shrivastava@iccs.ac.in

Mr. Karan Sahu
SY BFM Student,
Indira College of Commerce and Science, Pune-33
karan.sahu23@iccs.ac.in

Abstract

The rapid growth of quick commerce (Q-commerce) in India marks a significant transformation in consumer behavior and retail dynamics. This research explores the emergence, market dynamics, technological infrastructure, and economic impact of Q-commerce, which promises ultra-fast delivery within 10-30 minutes. Key drivers include increased urbanization, technological advancements, and shifting consumer preferences towards convenience. Major players such as Blinkit, Zepto, Swiggy Instamart, Dunzo Daily, and BigBasket BB Now dominate the market. Despite the sector's potential, challenges such as profitability, operational complexities, regulatory hurdles, and sustainability issues persist. The future outlook predicts significant market growth, driven by continued technological innovations and market expansions. This study provides valuable insights for industry stakeholders, highlighting opportunities and addressing challenges to support the sustainable development of the Q-commerce sector in India.

Keywords: Quick Commerce (Q-commerce), India, ultra-fast delivery, technological infrastructure, consumer behavior, economic impact, market growth, sustainability, Blinkit, Zepto.

Introduction: Define Quick Commerce (Q-commerce)

Quick commerce, or Q-commerce, is a subset of e-commerce that focuses on delivering products to customers in a remarkably short time frame, often within an hour or even minutes. This model originated with food delivery services but has rapidly expanded to include groceries, medicines, personal care items, and even electronics1. The COVID-19 pandemic significantly accelerated the adoption of Q-commerce as consumers sought convenience and safety in online shopping.

Significance of the Industry

The significance of Q-commerce lies in its ability to meet the growing consumer demand for instant gratification. With urbanization and busy lifestyles, consumers increasingly prefer quick and convenient shopping options3. In India, for example, Q-commerce has transformed the retail landscape, contributing significantly to the e-commerce sector. The gross merchandise value (GMV) of Q-commerce in India reached $2.3 billion in 2023, with projections indicating a robust compound annual growth rate (CAGR) of 27.9% between FY22 and FY272. This rapid growth highlights the industry's potential to reshape traditional retail models and offer unparalleled convenience to consumers.

Research Objectives and Scope

The primary objective of this research is to explore the evolution, growth, and challenges of Q-commerce, with a focus on the Indian market. The study aims to provide a comprehensive analysis of the Q-commerce ecosystem, including key players, consumer behavior, and regulatory implications4. By examining these factors, the research seeks to offer valuable insights for stakeholders, policymakers, and industry players, contributing to a more resilient and inclusive retail ecosystem.

The scope of this research encompasses:

- **Evolution of Q-commerce:**

  Tracing the development of Q-commerce from its inception to its current state.

- **Key Players:**

  Analyzing the major companies in the Q-commerce space, such as Blinkit, Swiggy Instamart, and Zepto.

- **Consumer Behavior:**

  Investigating how consumer preferences and behaviors have shifted towards Q-commerce.

- **Regulatory Landscape:**

  Examining the policy implications and potential regulatory challenges facing the Q-commerce industry.

- **Sustainability:**

  Assessing the environmental and economic sustainability of Q-commerce.

Historical Context

Evolution of E-commerce

E-commerce, or electronic commerce, has come a long way since its inception. The journey began in the 1960s with the introduction of Electronic Data Interchange (EDI), which allowed businesses to transfer documents electronically2. However, it wasn't until 1994 that the first online transaction took place, marking the birth of modern e-commerce. This involved the sale of a CD through an online retail platform called NetMarket2. Over the years, e-commerce has evolved significantly, with major milestones such as the launch of Amazon in 1995 and eBay in 1996. The 2000s saw the rise of mobile commerce and the integration of social media into e-commerce platforms, further expanding the reach and convenience of online shopping3. Today, e-commerce is a trillion-dollar industry, with global sales topping $4.13 trillion in 2020.

Emergence of Q-commerce

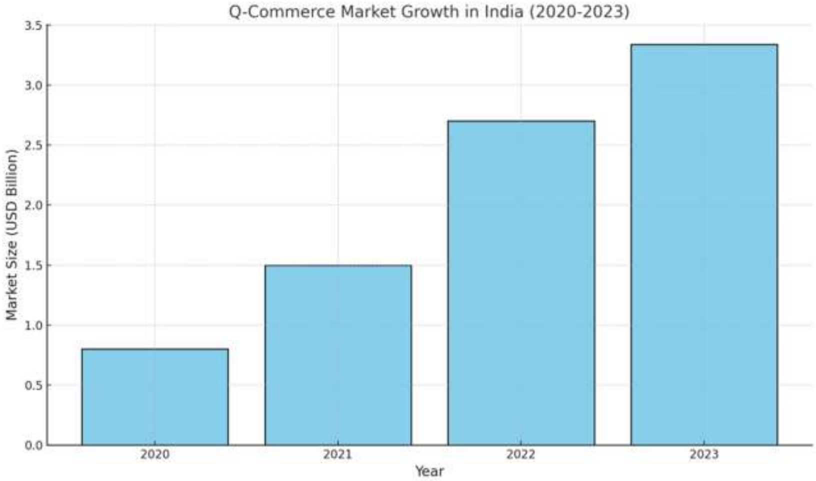
Quick commerce, or Q-commerce, emerged as a disruptive force in the retail landscape, redefining traditional retail paradigms. Initially focused on food delivery, Q-commerce has rapidly expanded to include groceries, medicines, personal care items, and electronics5. The concept gained traction in urban areas where consumers sought instant gratification and convenience. Companies like Blinkit, Swiggy Instamart, and Zepto have become key players in the Q-commerce space, leveraging technology to deliver products within minutes5. The rise of Q-commerce can be attributed to the increasing penetration of mobile internet and the growing demand for on-demand services.

Impact of COVID-19 on the Acceleration of Q-commerce

The COVID-19 pandemic played a pivotal role in accelerating the growth of Q-commerce. As lockdowns and social distancing measures became the norm, consumers turned to online shopping for their everyday needs8. This shift led to a surge in demand for quick delivery services, with Q-commerce platforms experiencing unprecedented growth. The pandemic highlighted the importance of convenience and safety in shopping, driving more consumers to adopt Q-commerce5. According to a report by UNCTAD, the share of e-commerce in global retail trade increased from 14% in 2019 to about 17% in 2020, with Q-commerce being a significant contributor to this growth. The trend towards online shopping is expected to continue, with Q-commerce playing a crucial role in the post-pandemic retail landscape.

Industry Overview: Quick Commerce (Q-Commerce)

Market Size and Growth Potential



The Q-commerce industry in India has grown exponentially in recent years, reshaping the way consumers access essential goods. As of 2024, the Q-commerce market in India was estimated to be worth approximately **USD 3.34 billion**, and it is expected to reach **USD 9.95 billion by 2029**, reflecting a compound annual growth rate (CAGR) of **4.50%**. This significant growth can be attributed to several factors, including the rapid urbanization of cities, the increasing penetration of smartphones, and the widespread adoption of digital payment systems.

Urbanization has led to an increase in the number of households seeking the convenience of quick deliveries. The burgeoning middle class, with its growing disposable income and busy lifestyles, has a high demand for convenience and time-saving services. In response, Q-commerce platforms are leveraging advanced technologies such as AI and machine learning to optimize their supply chains and enhance delivery efficiencies.

Moreover, the COVID-19 pandemic has played a crucial role in accelerating the adoption of Q-commerce. With lockdowns and social distancing norms in place, consumers turned to online platforms for their daily needs. This shift in consumer behavior has had a lasting impact, with many people continuing to prefer the convenience of quick deliveries even post-pandemic.

On the global front, the Q-commerce market was valued at **USD 68.82 billion in 2022** and is projected to grow at a CAGR of **22.2%** from 2023 to 2030. This robust growth is fueled by similar trends as seen in India, including increased urbanization, technological advancements, and changing consumer preferences. Major urban centers across the world, from New York to Tokyo, have witnessed a surge in the popularity of Q-commerce platforms. The growth of Q-commerce is further supported by the investment of significant capital into this sector by venture capitalists and large tech companies, recognizing the immense potential of this burgeoning industry.

Key Players Globally and Regionally

Blinkit

Blinkit, formerly known as Grofers, is one of the pioneers of Q-commerce in India. Founded in 2013 by Albinder Dhindsa and Saurabh Kumar, the company started as an online grocery delivery service but rebranded itself to offer ultra-fast delivery services in 2021. Blinkit operates a network of dark stores and partners with local suppliers to ensure rapid delivery of groceries, fresh fruits, vegetables, bakery items, personal care products, and more. Blinkit aims to deliver orders within 10-30 minutes, catering to the instant gratification needs of urban consumers. In June 2022, Blinkit was acquired by Zomato for **USD 568 million** in an all-stock deal, marking a significant consolidation in the Indian Q-commerce market.

Zepto

Zepto is another prominent player in the Indian Q-commerce market. Founded in 2021 by two Stanford University dropouts, Aadit Palicha and Kaivalya Vohra, Zepto has quickly risen to prominence for its promise of delivering groceries and essentials within 10-15 minutes. The company employs a model of micro-warehouses or dark stores strategically located in urban areas to optimize delivery times. Zepto's rapid growth can be attributed to its technological prowess, efficient supply chain management, and the ability to meet the high demands of urban consumers seeking quick and convenient shopping solutions.

Swiggy Instamart

Swiggy Instamart is the quick-commerce arm of Swiggy, one of India's leading food delivery platforms. Launched in 2020, Instamart aims to deliver groceries and daily essentials within 30 minutes. Swiggy leverages its extensive logistics network and technological infrastructure to provide reliable and efficient services. The company offers a wide assortment of products, including groceries, personal care items, and household essentials, catering to the needs of urban consumers. Swiggy's strong brand recognition and customer loyalty have significantly contributed to Instamart's success in the Q-commerce space.

Dunzo Daily

Dunzo Daily is a hyperlocal delivery service that started as a concierge and task management platform in 2015. Over the years, Dunzo has expanded its offerings to include quick commerce services under the brand name Dunzo Daily. The platform provides ultra-fast delivery of daily essentials and groceries within 19 minutes, leveraging its network of dark stores and partnerships with local retailers. Dunzo's focus on customer satisfaction and efficient logistics has made it a popular choice among urban consumers seeking quick and reliable delivery services.

BigBasket BB Now

BigBasket BB Now is the quick-commerce initiative of BigBasket, one of India's largest online grocery stores. Launched to compete with emerging Q-commerce platforms, BB Now promises to deliver groceries and essentials within 60 minutes. BigBasket utilizes its extensive network of dark stores and robust logistics infrastructure to ensure fast and reliable deliveries. The company offers a wide range of products, including fresh produce, groceries, personal care items, and household essentials. BigBasket's strong market presence and reputation for quality have helped BB Now gain traction in the competitive Q-commerce market.

These key players are driving the growth of the Q-commerce industry in India by leveraging advanced technologies, optimizing logistics, and meeting the increasing demand for convenience and speed among consumers. The competition among these companies is fierce, leading to continuous innovations and improvements in the Q-commerce ecosystem.

Technological Infrastructure in Quick Commerce (Q-Commerce)

Delivery Technologies

The backbone of Q-commerce lies in its sophisticated delivery technologies, which ensure that orders reach customers within an exceptionally short time frame. Key components of these technologies include:

- **Delivery Drones and Robots**:

  In some markets, companies are experimenting with autonomous delivery drones and robots. These devices can navigate urban environments, reducing the need for human couriers and enhancing delivery speed and efficiency. For example, Swiggy has tested the use of delivery drones in select cities to expedite the delivery of essential goods.

- **Electric Vehicles (EVs)**:

  Many Q-commerce companies are integrating EVs into their delivery fleets to reduce their carbon footprint and operational costs. Electric bikes and scooters are particularly popular in densely populated urban areas where quick and nimble transportation is essential.

- **Real-time Tracking and Navigation Systems**:

  Advanced GPS and real-time tracking systems allow companies to monitor their delivery personnel and optimize routes dynamically. This technology helps in reducing delivery times and improving the accuracy of estimated delivery windows, thereby enhancing customer satisfaction.

1. **Warehouse and Micro-fulfillment Centers**

   Central to the success of Q-commerce is the strategic deployment of warehouses and micro-fulfillment centers. These facilities are designed to store a wide range of products and facilitate rapid order processing:

- **Dark Stores**:

  Dark stores are essentially traditional retail stores that have been converted into fulfillment centers. They are not open to the public and are solely dedicated to processing online orders. This setup allows for quicker picking and packing of orders, which is crucial for the rapid delivery promises of Q-commerce companies.

- **Micro-fulfillment Centers (MFCs)**:

  These are small, automated warehouses located in urban areas close to the end customer. MFCs use advanced robotics and automation to quickly pick and pack orders, significantly reducing the time between order placement and delivery.

Companies like BigBasket BB Now and Blinkit have invested in MFCs to enhance their delivery speed and efficiency.

2 AI and Routing Optimization

Artificial intelligence (AI) plays a pivotal role in optimizing various aspects of Q-commerce operations, particularly in routing and delivery logistics:

- **Dynamic Routing Algorithms**:

  AI-driven dynamic routing algorithms can analyze real-time traffic data, order volumes, and delivery personnel locations to determine the most efficient delivery routes. This technology minimizes travel time and fuel consumption, ensuring that deliveries are made as quickly and efficiently as possible.

- **Predictive Analytics**:

  AI can also be used to predict demand patterns based on historical data, weather conditions, and local events. This predictive capability enables Q-commerce companies to pre-position inventory in strategic locations, thereby reducing delivery times and enhancing service reliability.

3 Mobile Application Innovations

The mobile applications used by Q-commerce companies are not just platforms for placing orders; they are integral to the entire shopping and delivery experience:

- **User-friendly Interfaces**:

  Modern Q-commerce apps feature intuitive interfaces that make it easy for customers to browse products, place orders, and track deliveries. Features such as personalized recommendations, voice search, and seamless payment options enhance the overall user experience.

- **Real-time Order Tracking**:

  Customers can track their orders in real-time, receiving updates on the status of their delivery from the moment it is picked up until it reaches their doorstep. This transparency builds trust and keeps customers informed.

- **Push Notifications**:

  Apps send push notifications to alert customers about special offers, new product arrivals, and the status of their orders. These notifications help keep customers engaged and informed.

4 Real-time Inventory Management

Efficient inventory management is crucial for the success of Q-commerce, as it ensures that products are available and can be delivered quickly:

- **Automated Inventory Systems**:

  Automated inventory management systems use AI and machine learning to monitor stock levels in real-time, predict demand, and optimize stock replenishment. This ensures that high-demand items are always in stock and available for quick delivery.

- **Integration with Supplier Systems**:

  Many Q-commerce platforms integrate their inventory management systems with those of their suppliers, allowing for seamless coordination and quicker restocking. This integration reduces the risk of stockouts and ensures a consistent supply of products.

- **Real-time Data Analytics**:

  By analyzing real-time sales data, Q-commerce companies can adjust their inventory levels dynamically. This helps in managing perishables and ensuring that fresh products are always available to customers.

Business Models in Quick Commerce (Q-Commerce)

Different Q-commerce Models

The Q-commerce industry has developed various business models to cater to the evolving needs of consumers who seek convenience and speed. Here are some of the prominent models:

1. Dark Stores:

- **Definition and Purpose**:

  Dark stores are fulfillment centers that operate like traditional grocery stores but are not open to the public. These stores are strategically located in urban areas to facilitate rapid order processing and delivery.

- **Operations**:

  Employees in dark stores pick and pack orders placed online, which are then handed over to delivery personnel for rapid distribution. The layout of dark stores is optimized for efficiency, with products arranged to minimize the time required for order picking.

- **Examples**:

  Blinkit, Swiggy Instamart, and BigBasket BB Now use dark stores extensively to meet their quick delivery promises.

2. **Micro-Fulfillment Centers (MFCs):**

- **Definition and Purpose**:

  MFCs are small, highly automated warehouses located close to end customers, typically within urban areas. They serve as mini distribution hubs designed to fulfill online orders quickly.

- **Operations**:

  MFCs utilize advanced robotics and automation technology to pick, pack, and dispatch orders rapidly. This reduces the time between order placement and delivery.

- **Examples**:

  Companies like Zepto and Dunzo Daily have invested in MFCs to enhance their delivery efficiency and meet the growing demand for instant gratification.

3. **On-Demand Delivery Platforms:**

- **Definition and Purpose**:

  On-demand delivery platforms connect consumers with local stores and couriers to facilitate rapid delivery of goods. These platforms leverage technology to streamline the order processing and delivery.

- **Operations**:

  Consumers place orders through a mobile app or website, which are then routed to the nearest available courier. The courier picks up the order from a local store and delivers it to the consumer's doorstep within a short time frame.

- **Examples**:

  Platforms like Swiggy and Zomato started with food delivery but have expanded into Q-commerce to deliver groceries and other essentials.

Revenue Streams

Q-commerce companies generate revenue through various channels, including:

1. **Delivery Fees:**

- **Definition**:

  Charges imposed on consumers for the delivery service.

- **Implementation**:

  Fees can be fixed or variable, depending on the delivery distance, order size, and time of day. For instance, express delivery options may come with higher fees.

- **Impact**:

  Delivery fees contribute significantly to the revenue of Q-commerce companies, helping them cover operational costs and generate profits.

2. **Subscription Services:**

- **Definition**:

  Monthly or annual subscription plans that offer benefits such as free deliveries, priority service, and exclusive discounts.

- **Implementation**:

  Companies offer various subscription tiers, each with different levels of benefits. For example, Swiggy offers Swiggy One, a subscription service providing free deliveries and other perks.

- **Impact**:

  Subscription services provide a steady and predictable revenue stream, encouraging customer loyalty and repeat business.

3. **Advertising and Promotional Partnerships:**

- **Definition**:

  Partnering with brands and suppliers to promote their products on the Q-commerce platform.

- **Implementation**:

  Companies can offer advertising space on their apps and websites, as well as push notifications and email marketing campaigns. Brands may also pay for prime placement of their products in search results or featured sections.

- **Impact**:

  Advertising and promotional partnerships provide an additional revenue source, allowing companies to monetize their platform traffic.

4. **Commission on Sales:**

- **Definition**:

  A percentage of each sale made through the Q-commerce platform that goes to the company.

- **Implementation**:

  Companies negotiate commission rates with suppliers and local stores. For instance, Zepto charges a commission on each sale made through its platform.

- **Impact**:

  Commissions on sales help Q-commerce companies generate revenue while fostering relationships with suppliers and local businesses.

Operational Strategies

To ensure efficient and effective operations, Q-commerce companies employ various strategies:

1. **Optimized Route Planning:**

- **Definition**:

  Using advanced algorithms and real-time data to plan the most efficient delivery routes.

- **Implementation**:

  Companies use AI and machine learning to analyze traffic patterns, order volumes, and delivery locations. Dynamic routing allows couriers to avoid delays and minimize travel time.

- **Impact**:

  Optimized route planning reduces operational costs, improves delivery speed, and enhances customer satisfaction.

2. **Real-Time Tracking and Monitoring:**

- **Definition**:

  Tracking deliveries in real-time to provide accurate updates to customers and manage delivery personnel.

- **Implementation**:

  Companies use GPS and mobile apps to track the location of couriers and monitor the status of orders. Customers can view real-time updates on their orders through the app.

- **Impact**:

  Real-time tracking increases transparency, builds trust with customers, and allows companies to address any issues promptly.

3. **Efficient Warehouse Management:**

- **Definition**:

  Streamlining warehouse operations to ensure quick order processing and accurate inventory management.

- **Implementation**:

  Companies use warehouse management systems (WMS) and automation technologies to optimize the picking, packing, and shipping processes. This includes the use of robots, conveyor belts, and barcode scanning systems.

- **Impact**:

  Efficient warehouse management reduces order processing times, minimizes errors, and ensures that products are available for immediate delivery.

4. **Technology Integration:**

- **Definition**:

  Leveraging technology to enhance all aspects of the Q-commerce operation.

- **Implementation**:

  Companies integrate various technologies, such as AI, machine learning, and IoT, to optimize inventory management, predict demand, and improve customer service. For example, AI-driven chatbots can handle customer inquiries and provide support.

- **Impact**:

  Technology integration enhances operational efficiency, improves the customer experience, and supports scalability.

Funding and Investment Landscape

The Q-commerce sector has attracted significant investment from various sources, fueling its rapid growth and innovation:

1. **Private Equity:**

- **Definition**:

  Investments made by private equity firms in Q-commerce companies.

- **Implementation**:

  Private equity firms provide capital in exchange for equity stakes in Q-commerce companies. These investments help companies scale their operations, expand their reach, and innovate their services.

- **Impact**:

  Private equity investments have supported the growth of several Q-commerce companies, enabling them to compete in the fast-paced market.

2. Venture Capital:

- **Definition**:

  Early-stage funding provided by venture capital firms to support the growth of startups.

- **Implementation**:

  Venture capital firms invest in Q-commerce startups with high growth potential, providing the necessary capital for product development, marketing, and expansion.

- **Impact**:

  Venture capital funding has been instrumental in the rise of many Q-commerce companies, allowing them to innovate and capture market share.

3. Strategic Partnerships:

- **Definition**:

  Collaborations with established companies to enhance market reach and capabilities.

- **Implementation**:

  Q-commerce companies partner with retailers, suppliers, and technology providers to expand their offerings and improve their operations. For example, partnerships with major grocery chains allow Q-commerce platforms to offer a wider range of products.

- **Impact**:

  Strategic partnerships provide access to new markets, enhance product offerings, and improve operational efficiency, driving growth and competitiveness.

4. Public Markets:

- **Definition**:

  Raising capital through initial public offerings (IPOs) or secondary offerings on stock exchanges.

- **Implementation**:

  Companies go public to access a larger pool of capital, increase their visibility, and provide liquidity to early investors and employees.

- **Impact**:

  Public market funding provides substantial capital for expansion, innovation, and scaling, enabling Q-commerce companies to achieve their growth objectives.

Consumer Behavior Analysis in Quick Commerce (Q-commerce)

Changing Consumer Expectations

The rapid growth of Q-commerce can be attributed to the shifting expectations of consumers who increasingly value speed, convenience, and efficiency. Modern consumers are more demanding and less patient, expecting goods to be delivered almost instantly.

1. **Instant Gratification:**

   Today's consumers, particularly the younger demographic, have grown up in a digital age where instant gratification is the norm. This expectation extends to their shopping habits, where they prefer services that can deliver products within hours, if not minutes. This trend has been accelerated by the rise of on-demand services in other areas such as food delivery and ride-hailing.

2. **High Standards of Service:**

   With the proliferation of Q-commerce, consumers now expect high levels of service, including reliable delivery times, real-time tracking, and hassle-free returns. Any failure to meet these expectations can result in negative reviews and lost customers.

3. **Personalized Shopping Experience:**

   Consumers today expect a personalized shopping experience, with recommendations tailored to their preferences and past purchases. Q-commerce companies leverage data analytics and AI to offer customized product suggestions, enhancing the shopping experience.

Demographic Segments Using Q-commerce

Different demographic segments have different motivations and usage patterns when it comes to Q-commerce:

1. **Millennials and Gen Z:**

   These groups are the primary users of Q-commerce services. They value convenience, speed, and technology-driven solutions. They are more likely to use mobile apps for shopping and appreciate features like real-time tracking and personalized recommendations.

2. **Urban Dwellers:**

   People living in urban areas are the main users of Q-commerce services due to the fast-paced lifestyle and the higher availability of these services in cities. The density of urban populations also makes it easier for companies to operate efficiently and profitably.

3. **Working Professionals:**

   Busy professionals who have limited time for traditional shopping are significant users of Q-commerce. They rely on these services for quick and convenient access to groceries, meals, and household essentials.

4. **Families with Young Children:**

   Parents with young children appreciate the convenience of Q-commerce as it saves them time and effort. They often use these services to order groceries, baby supplies, and other household items.

Purchasing Patterns

Purchasing patterns in Q-commerce reflect the urgency and convenience factors that drive this industry:

1. **Frequent Small Orders:**

   Unlike traditional e-commerce, where consumers might place larger, less frequent orders, Q-commerce sees frequent small orders. Consumers order items as and when they need them, confident that they will be delivered quickly.

2. **High Turnover of Essential Goods:**

   Items such as groceries, household essentials, and personal care products dominate the purchasing patterns in Q-commerce. These are items that consumers need regularly and prefer to receive quickly.

3. **Impulse Purchases:**

   The ease and speed of Q-commerce also encourage impulse buying. Consumers are more likely to make spontaneous purchases when they know the items will arrive quickly.

4. **Time-sensitive Purchases:**

   Q-commerce is often used for time-sensitive purchases such as last-minute grocery items for a meal, emergency supplies, or forgotten essentials. This urgency drives the preference for quick delivery services.

Convenience Factors

Several factors contribute to the convenience of Q-commerce, making it an attractive option for consumers:

1. **Speed of Delivery:**

   The primary convenience factor in Q-commerce is the speed of delivery. With delivery times often promised within 30 minutes or less, consumers are drawn to the instant access to goods.

2. **Ease of Use:**

   User-friendly mobile apps and websites with intuitive interfaces make it easy for consumers to browse, order, and track their purchases. Features such as voice search, one-click ordering, and seamless payment options enhance the convenience.

3. **Real-time Tracking:**

   The ability to track orders in real-time provides transparency and builds trust. Consumers can see exactly when their order will arrive, allowing them to plan accordingly.

4. **Flexibility:**

   Q-commerce services often offer flexible delivery options, including scheduling deliveries at specific times, selecting delivery windows, and choosing contactless delivery. This flexibility caters to the varied needs and preferences of consumers.

5. **Wide Range of Products:**

   Q-commerce platforms typically offer a wide range of products, from groceries and household items to electronics and personal care products. This variety allows consumers to meet all their needs through a single platform.

6. **Customer Support:**

   Responsive customer support is a critical convenience factor. Consumers expect quick resolution of any issues related to their orders, and efficient customer service can significantly enhance the overall experience.

Economic Impact of Quick Commerce (Q-commerce) in India

Job Creation

Q-commerce has significantly contributed to job creation in India, particularly in urban areas. The sector has created employment opportunities across various segments, including:

- **Delivery Personnel**:

  The backbone of Q-commerce, delivery personnel are employed by companies like Blinkit, Swiggy Instamart, and Dunzo Daily. These jobs provide flexible working hours and are accessible to a wide range of individuals.

- **Warehouse Staff**:

  With the establishment of dark stores and micro-fulfillment centers, there is a growing demand for warehouse staff to manage inventory, pick, pack, and dispatch orders3.
- **Customer Support**:

  As Q-commerce platforms expand, there is an increased need for customer support representatives to handle inquiries, complaints, and provide assistance to users.
- **Technology and Operations**:

  Skilled professionals are required to manage and optimize the technology infrastructure, including route planning, real-time tracking, and data analytics.

Disruption of Traditional Retail

Q-commerce has disrupted traditional retail in several ways:

- **Shift to Online Shopping**:

  Consumers are increasingly opting for online shopping due to the convenience and speed offered by Q-commerce platforms. This shift has led to a decline in foot traffic and sales for brick-and-mortar stores.
- **Competitive Pricing**:

  Q-commerce platforms often offer competitive pricing and discounts, attracting price-sensitive consumers away from traditional retail outlets.
- **Innovation in Retail**:

  Traditional retailers are forced to innovate and adopt new technologies to compete with Q-commerce platforms. This includes offering online ordering, home delivery, and enhancing in-store experiences.

Investment Trends

The Q-commerce sector has attracted significant investment, driving its rapid growth:

- **Private Equity and Venture Capital**:

  Q-commerce companies have received substantial funding from private equity firms and venture capitalists. For example, Blinkit received significant investments from Zomato, and Zepto has raised funds from various investors3.
- **Strategic Partnerships**:

  Established companies like Tata Digital and Zomato have invested in Q-commerce platforms to expand their market presence and leverage their existing infrastructure.

- **Government Support**:

  Initiatives like Digital India and the reduction in data costs have facilitated the growth of e-commerce, including Q-commerce.

Economic Contribution

Q-commerce has made a notable economic contribution to India:

- **Growth of E-commerce**:

  The Q-commerce sector is a significant part of the broader e-commerce industry, contributing to the overall growth of online retail. The gross merchandise value (GMV) of Q-commerce in India reached $2.3 billion in 2023 and is projected to grow significantly1.

- **Market Expansion**:

  Q-commerce has expanded the market for online shopping, reaching consumers in urban and semi-urban areas. This expansion has led to increased sales and revenue for e-commerce companies.

- **Consumer Spending**:

  The convenience and speed of Q-commerce have encouraged consumers to spend more on online purchases, boosting overall consumer spending.

Challenges and Limitations in Quick Commerce (Q-Commerce) in India

Profitability Concerns

One of the most significant challenges facing Q-commerce companies in India is achieving profitability. While the sector has seen rapid growth, turning this growth into sustainable profits remains a daunting task.

1. **High Operational Costs:**

- **Delivery Expenses**:

  The promise of ultra-fast delivery within minutes requires a robust and costly logistics network. Companies need to maintain a large fleet of delivery personnel and vehicles, leading to high operational expenses.

- **Warehouse Costs**:

  Establishing and operating dark stores and micro-fulfillment centers in urban areas involves significant costs, including rent, utilities, and labor.

- **Technology Investments**:

  Continuous investments in technology, such as AI, automation, and real-time tracking systems, are necessary to maintain efficiency and meet consumer expectations.

2. **Thin Margins:**

- **Competitive Pricing**:

  To attract and retain customers, Q-commerce platforms often offer competitive pricing and frequent discounts. This results in thin profit margins, making it challenging to achieve profitability.

- **Free Delivery Services**:

  Offering free or low-cost delivery to attract customers further strains profit margins, especially for small orders where the delivery cost can exceed the order value.

3. **Customer Acquisition Costs:**

- **Marketing and Promotions**:

  High spending on marketing and promotional activities to acquire and retain customers adds to the overall costs. As the market becomes more competitive, these expenses are likely to increase.

Operational Complexities

The operational complexities of running a Q-commerce business are significant, given the need for speed and efficiency in every aspect of the supply chain.

1. **Logistics Management:**

- **Real-Time Coordination**:

  Coordinating real-time inventory updates, order processing, and delivery logistics requires advanced technology and seamless integration. Any disruption can lead to delays and customer dissatisfaction.

- **Route Optimization**:

  Ensuring efficient delivery routes in congested urban areas is complex and requires continuous monitoring and optimization.

2. **Inventory Management:**

- **Perishable Goods**:

  Managing inventory, particularly for perishable goods like fresh produce and dairy products, is challenging. Companies need to balance stock levels to minimize waste and ensure freshness.

- **Demand Forecasting**:

  Accurate demand forecasting is critical to avoid stockouts or overstocking, both of which can impact profitability and customer satisfaction.

3. **Workforce Management:**

- **Staffing Levels**:

  Maintaining the right staffing levels for warehouse operations and delivery personnel is crucial. Fluctuations in demand, such as peak hours or seasons, require flexible staffing solutions.

Regulatory Challenges

Navigating the regulatory landscape in India poses several challenges for Q-commerce companies.

1. **Compliance with Local Regulations:**

- **Labor Laws**:

  Ensuring compliance with labor laws, including fair wages, working conditions, and benefits for delivery personnel and warehouse staff, can be complex and costly.

- **Licensing and Permits**:

  Obtaining the necessary licenses and permits to operate dark stores and fulfillment centers in urban areas involves navigating bureaucratic processes and can be time-consuming.

2. **Consumer Protection Laws:**

- **Product Safety**:

  Ensuring the safety and quality of products, particularly food items, requires adherence to stringent regulations and standards set by authorities such as the Food Safety and Standards Authority of India (FSSAI).

- **Data Privacy**:

  Compliance with data privacy laws, such as the Personal Data Protection Bill, is essential to protect customer data and maintain trust.

Competition

The Q-commerce market in India is highly competitive, with numerous players vying for market share.

1. **Market Saturation:**

- **New Entrants**:

  The rapid growth of Q-commerce has attracted numerous new entrants, increased competition and making it challenging for existing players to maintain their market positions.

- **Price Wars**:

  Intense competition often leads to price wars, with companies offering deep discounts and promotions to attract customers. This further erodes profit margins.

2. **Innovation and Differentiation:**

- **Technological Advancements**:

  Companies need to continuously innovate and invest in new technologies to stay ahead of the competition. This includes advancements in AI, automation, and delivery logistics.

- **Service Differentiation**:

  Differentiating services through unique offerings, such as premium delivery options, loyalty programs, and exclusive product partnerships, is essential to stand out in a crowded market.

Sustainability Issues

Sustainability is becoming an increasingly important consideration for Q-commerce companies as consumers and regulators focus on environmental impact.

1. **Environmental Impact:**

- **Carbon Footprint**:

  The rapid delivery model, which often involves multiple short trips and the use of motorized vehicles, contributes to a higher carbon footprint. Companies need to explore greener alternatives, such as electric vehicles and bike couriers.

- **Packaging Waste**:

  The use of single-use packaging materials for quick deliveries adds to environmental waste. Implementing sustainable packaging solutions and reducing plastic usage are critical challenges.

2. **Social Sustainability:**

- **Fair Labor Practices**:

  Ensuring fair wages, safe working conditions, and benefits for delivery personnel and warehouse staff is crucial for social sustainability. Companies must balance efficiency with the well-being of their workforce.

3. **Long-Term Viability:**

- **Economic Sustainability**:

  Achieving long-term economic sustainability requires balancing growth with profitability. This involves optimizing operations, managing costs, and exploring new revenue streams.

Future Outlook

Predicted Market Growth

The Q-commerce market in India is projected to grow significantly. It is expected to reach **$9.95 billion by 2029**, with a compound annual growth rate (CAGR) of over **4.5%**. This growth is driven by the increasing demand for fast and convenient delivery services1.

Technological Innovations

Technological advancements are playing a crucial role in the growth of Q-commerce. Innovations such as **AI-powered logistics**, **real-time inventory tracking**, and **route optimization** are helping companies deliver products faster and more efficiently2. These technologies ensure that popular products are always available and that deliveries are made promptly.

Potential Market Expansions

Q-commerce is expanding rapidly, especially in urban areas. Companies are leveraging **dark stores** (local warehouses) to facilitate faster deliveries. The market is also seeing growth in tier-2 and tier-3 cities, thanks to increased internet penetration and smartphone usage2.

Emerging Trends

Some emerging trends in Q-commerce include the **integration of electric vehicles** for sustainable delivery practices, **personalized customer experiences**, and **partnerships with local vendors**. These trends are helping companies meet consumer demands for speed, convenience, and sustainability.

Research Methodology

This research paper on the quick commerce (Q-commerce) sector in India employs a mixed-methods approach, integrating both quantitative and qualitative research methodologies to provide a comprehensive and in-depth analysis.

1. **Quantitative Analysis of Market Data**

   Objective: To gather and analyze numerical data to identify trends, patterns, and growth trajectories in the Q-commerce sector.

- **Data Sources**:

  Industry reports, market research databases, financial statements, and e-commerce transaction data.

- **Techniques**:
  Statistical analysis, trend analysis, and forecasting models.
- **Tools**:
  Software such as Excel, SPSS, R, and Python for data analysis and visualization.
- **Outcome**:
  A comprehensive understanding of market size, growth rates, and market segmentation.

2. Qualitative Interviews with Industry Experts

- **Objective**:
  To gain insights and perspectives from professionals with extensive experience in the Q-commerce industry.
- **Participants**:
  Executives, managers, and experts from leading Q-commerce companies such as Blinkit, Zepto, Swiggy Instamart, and Dunzo Daily.
- **Techniques**:
  Semi-structured interviews, focus groups, and expert panels.
- **Tools**:
  Recording devices, transcription software, and qualitative data analysis tools like NVivo.
- **Outcome**:
  In-depth understanding of industry challenges, operational strategies, and future trends.

3. Case Studies of Leading Q-commerce Companies

- **Objective**:
  To analyze the business models, strategies, and performance of top Q-commerce companies.
- **Subjects**:
  Blinkit, Zepto, Swiggy Instamart, Dunzo Daily, and BigBasket BB Now.
- **Techniques**:
  Detailed examination of company histories, strategies, market positioning, and performance metrics.
- **Tools**:
  Case study research methodology, document analysis, and thematic analysis.

- **Outcome**:

  Detailed case studies highlighting best practices, key success factors, and lessons learned.

4. **Survey of Consumer Preferences**

- **Objective**:

  To understand consumer behavior, preferences, and satisfaction with Q-commerce services.
- **Participants**:

  A diverse sample of consumers from urban areas who use Q-commerce services.
- **Techniques**:

  Online surveys, questionnaires, and opinion polls.
- **Tools**:

  SurveyMonkey, Google Forms, and statistical software for data analysis.
- **Outcome**:

  Insights into consumer demographics, purchasing patterns, and satisfaction levels, which can inform marketing and service improvement strategies.

5. **Analysis of Financial Reports and Investor Presentations**

- **Objective**:

  To assess the financial health, investment trends, and economic impact of Q-commerce companies.
- **Data Sources**:

  Annual reports, investor presentations, SEC filings, and financial databases.
- **Techniques**:

  Financial ratio analysis, trend analysis, and investment appraisal.
- **Tools**:

  Excel, financial modeling software, and financial databases like Bloomberg and Thomson Reuters.
- **Outcome**:

  A comprehensive financial analysis that provides insights into the profitability, sustainability, and investment attractiveness of Q-commerce companies.

Implementation Steps

1. **Data Collection**:

   Gather quantitative data from industry reports, financial statements, and market research databases. Conduct qualitative interviews with industry experts and collect primary data through surveys.

2. **Data Analysis**:

   Use statistical software to analyze quantitative data, identifying key trends and patterns. Apply qualitative analysis tools to interview transcripts and survey responses to extract thematic insights.

3. **Case Study Development**:

   Conduct detailed case studies of leading Q-commerce companies, examining their business models, strategies, and performance metrics.

4. **Report Compilation**:

   Synthesize findings from quantitative and qualitative analyses, case studies, and financial reports into a comprehensive research paper.

5. **Review and Validation**:

   Validate findings through expert reviews and cross-verification with secondary data sources.

Ethical Considerations

- **Informed Consent**:

  Ensure that all participants in interviews and surveys provide informed consent.

- **Confidentiality**:

  Maintain the confidentiality of respondents and safeguard sensitive data.

- **Bias Mitigation**:

  Strive to minimize biases in data collection, analysis, and interpretation.

Conclusion

Key Findings

This research has provided a comprehensive analysis of the quick commerce (Q-commerce) sector in India, highlighting its rapid growth and evolving landscape. Key findings include:

- **Market Definition and Significance**:

  Q-commerce is a rapidly growing segment of e-commerce focused on ultra-fast delivery of goods within 10-30 minutes. The significance of this industry lies in its ability to cater to the modern consumer's demand for speed and convenience.

- **Historical Context**:

  The evolution of e-commerce and the emergence of Q-commerce have been driven by technological advancements and changing consumer behaviors, further accelerated by the COVID-19 pandemic.

- **Industry Overview**:

  The Indian Q-commerce market is poised for substantial growth, with major players like Blinkit, Zepto, Swiggy Instamart, Dunzo Daily, and BigBasket BB Now leading the charge. These companies leverage advanced technologies and innovative business models to meet consumer demands.

- **Technological Infrastructure**:

  The success of Q-commerce is underpinned by sophisticated delivery technologies, warehouse and micro-fulfillment centers, AI-driven routing optimization, mobile application innovations, and real-time inventory management.

- **Consumer Behavior Analysis**:

  Indian consumers, particularly urban dwellers and young professionals, are increasingly valuing speed, convenience, and personalized shopping experiences, driving the growth of Q-commerce.

- **Economic Impact**:

  Q-commerce has contributed to job creation, disrupted traditional retail, attracted significant investment, and added value to the Indian economy.

- **Challenges and Limitations**:

  Despite its growth, the sector faces challenges such as profitability concerns, operational complexities, regulatory hurdles, intense competition, and sustainability issues.

- **Future Outlook**:

  The future of Q-commerce in India looks promising, with predicted market growth, technological innovations, potential market expansions, and emerging trends shaping the landscape.

Research Implications

The findings of this research have several implications for various stakeholders:

- **Industry Players**:

  Q-commerce companies must continue to innovate and adapt to meet evolving consumer demands and overcome operational challenges. Investment in technology and infrastructure will be crucial for sustained growth.

- **Policymakers**:

  There is a need for regulatory frameworks that support the growth of Q-commerce while addressing concerns related to labor rights, data privacy, and environmental sustainability.

- **Investors**:

  The Q-commerce sector presents lucrative investment opportunities, given its rapid growth and potential for disruption. Investors should consider the long-term viability and scalability of business models.

- **Researchers**:

  Further research is needed to explore the long-term economic impact of Q-commerce, its environmental footprint, and the social implications of rapid urban delivery services.

Recommendations for Stakeholders

Based on the research findings, the following recommendations are proposed for stakeholders:

For Q-commerce Companies:

- **Enhance Technological Capabilities**:

  Invest in advanced technologies such as AI, robotics, and real-time data analytics to improve operational efficiency and customer experience.

- **Focus on Sustainability**:

  Develop and implement strategies to reduce the environmental impact of rapid deliveries, such as using electric vehicles and optimizing delivery routes.

- **Expand Market Reach**:

  Explore opportunities to expand services to tier-2 and tier-3 cities, tapping into untapped markets with growing digital adoption.

For Policymakers:

- **Create Supportive Regulations**:
  Develop regulatory frameworks that support the growth of Q-commerce while ensuring fair labor practices, data privacy, and consumer protection.
- **Encourage Innovation**:
  Foster an environment that encourages innovation through incentives and support for startups and technology adoption.

For Investors:

- **Evaluate Long-term Potential**:
  Assess the long-term growth potential and scalability of Q-commerce companies before investing, focusing on their ability to innovate and adapt.
- **Diversify Investments**:
  Consider diversifying investments across different players and regions to mitigate risks and capitalize on growth opportunities.

For Researchers:

- **Conduct Longitudinal Studies**:
  Investigate the long-term economic, social, and environmental impacts of Q-commerce to provide a deeper understanding of its implications.
- **Explore Consumer Behavior**:
  Conduct studies on changing consumer behaviors and preferences to help Q-commerce companies better meet customer needs.

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INDIA'S PATH TO HAPPINESS: A REGIONAL ANALYSIS USING PUNE AS A CASE STUDY

Dheeraj Raghunath Janrao
Student,
Indira College of Commerce and Science,
Pune.
dheeraj.janrao22@iccs.ac.in

Rishikesh Pramod Dubey
Student,
Indira College of Commerce and Science,
Pune.
rishikesh.dubey22@iccs.ac.in

Miss. Monika Verma
Assistant Professor, Department of Commerce, Indira College of Commerce and Science, Pune.
monikaverma@iccs.ac.in

Abstract:

India's position on the World Happiness Index has consistently remained low, ranking 126th in 2023 with a score of 4.04, despite being one of the fastest-growing economies. This research investigates the socio-economic and governance-related factors contributing to this ranking, by focusing on Pune, recognized as the happiest city in Maharashtra and ranked 12th nationwide in the India Cities Happiness Report 2020 (Times of India, 2021). The study used a survey of 256 participants in Pune the sample comprised 0.1% of the Pune's population (32, 000, 000) to assess happiness index factors. Secondary data was collected from global, South Asian, and India-specific reports and research papers, focusing on factors influencing healthcare accessibility, education, and governance in cities like Pune.

The findings reveal significant dissatisfaction with healthcare services, with 62% of respondents rating them as inadequate and 30% reporting limited access to affordable care. Additionally, while 83% of respondents have access to educational facilities, 90% believe the quality of education requires substantial improvement. Economic disparity remains a critical issue, with 93% perceiving a significant gap between the rich and poor. Public trust in governance is also limited, with only 20% expressing high confidence in the government's ability to address citizens' needs. Despite these challenges, 79% of respondents demonstrated a willingness to participate in community-driven initiatives, indicating strong potential for grassroots engagement.

This study emphasizes the need for region-specific strategies to address these challenges. Recommendations include expanding healthcare access through schemes like Ayushman Bharat, improving educational infrastructure and teacher training,

promoting economic equality through SME support and job creation, and fostering participatory governance to build trust. Mental health initiatives and environmental rejuvenation programs are also identified as critical components for enhancing happiness. By leveraging localized insights from Pune, this research provides a framework for scalable interventions aimed at improving India’s Happiness Index, fostering inclusivity, and promoting well-being across the nation.

1. Key Words

India Happiness Index, India’s Happiness Ranking, Policy Recommendations for Happiness, Socioeconomic Factors of Happiness, Pune as a Case Study, World Happiness Report.

2. Introduction

The Happiness Index as a general measure is also known as the World Happiness Report or provides a general overview of the population’s level of happiness. Launched in 2012 by the United Nations, the index was designed to offer a quantitative measure for happiness by including not only material conditions such as GDP but also religious, social and psychological dimensions. This is a range of factors that determine people’s quality of life and societies’ including income level, number of social connections, life expectancy, level of personal freedom, average charitable donations and perceived level of corruption respectively.

This paper evaluates India’s position in the Happiness Index based on the World Happiness Report and shows that it has both strengths and weaknesses that affect its happiness score. However, throughout the decades, India still has these problems that influence the population’s living standard despite having made a significant amount of economic progress and a decline in poverty levels. Elements like relative poverty, low social capital, and restricted health and educational services explain the country’s lower position. However, cultural and social capital of India proves very useful in promoting community health and support.

The following graph shows India's Happiness Index rankings over the last ten years:

India's Happiness Index (2014-2023)		
Year	**Rank**	**Score**
2014	117	4.77
2015	118	4.57
2016	118	4.4

2017	122	4.19
2018	133	4.19
2019	140	4.02
2020	144	3.82
2021	139	3.78
2022	136	4.04
2023	126	4.04

This data highlights that while India’s happiness ranking has fluctuated over the years, it remains relatively low, suggesting that more needs to be done to address key socio-economic factors affecting well-being.

3. Literature Review

Happiness is easily studied in India because of its history, rate of growth, and diverse culture. Biswas-Diener, Tay, and Diener (2012) explore happiness in India from two perspectives: called “outside in” and “inside out”. The “outside-in” perspective examines survey results and concludes that Indians are relatively happy but can be happier as policies progress to employment and construction. The first ‘inside-out’ model aims to represent the role of culture in human happiness. It also provides suggestions as to how clinical interventions aimed at improving mental health can be optimised.

In his study, Mahajan (2019) explores the assessment of the decreasing position of India in the World Happiness Index and high GDP rate. By looking at such factors, the author reveals that unhappiness is caused by corruption, lack of trust in governance, and financial pressure. What sets India apart from Bhutan and Nepal according to Mahajan is that both have embraced transparent governance and social equity. To overcome this, the study suggests the government of India to reduce income disparity, improve welfare state, and embrace human development.

India’s low ranking on the World Happiness Index is largely due to high population growth, poverty, and limited access to education and healthcare. Despite economic progress, income inequality and inadequate social support persist. As Shome (2023) suggests in her book The Creation of Poverty and Inequality in India: Exclusion, Isolation, Domination and Extraction, improving access to essential services could enhance overall well-being and potentially improve the country’s happiness ranking.

According to the Times of India (2021), Pune has been recognized as the happiest city in Maharashtra, ranking 12th nationwide in the India Cities Happiness Report 2020. Based on a survey of 13,000 individuals across 34 cities, the report highlighted six key factors influencing happiness: work, relationships, health, philanthropy, spirituality, and the impact of COVID-19.This is because Pune has balanced the progress it has achieved and has efficiently managed the pandemic situation, the general cleanliness due to smart city development, and nice weather that makes the residents of the city feel good about themselves and the city as a whole.

Thorat et al. (2023) critiques the limitations of standardized Liveability Indices in addressing region-specific challenges, particularly in cities like Pune. Their study outlines the methodology to develop a liveability assessment model applicable at the zone level and suggests the identification of significant parameters, making it useful for strategic urban planning. This context-sensitive approach aligns with the focus of my research on India's Happiness Index by highlighting the importance of tailored frameworks to address local socio-economic and cultural conditions for improving overall quality of life.

4. Statement of Problem

India with its great cultural history, economic development, and diverse population has a very low ranking in the World Happiness Index; it is 126 among 143 countries with the score 4.054[1]. These determinants include income inequality, health, education, social welfare and even the level of trust people have on the government they elected are some of the key potential factors to this problem.

While the idea of happiness and well-being is gradually being adopted internationally, India has no clear pattern on the approach to promote proportions of people's happiness in our country. Existing research overlooks the role of *localized cultural practices* and *community engagement* in shaping happiness. In cities like Pune, rapid urbanization creates unique challenges, such as diminishing community bonds and rising mental health issues, which are insufficiently studied.

This research addresses these gaps by analysing the intersection of urban pressures, cultural dynamics, and governance, providing region-specific insights to improve well-being and inform scalable strategies for enhancing happiness. The absence of a specific

[1] World Happiness Report (Helliwell, 2023)

strategy to increase the Happiness Index in India adds further credence for this research.

5. Objective of Study

a) To identify the factors affecting to India's low Happiness Index score by focusing income inequality, health, education, and social welfare.

b) To analyse the situation in Pune as a microcosm, with the aim of understanding the factors that influence happiness on a national scale.

c) To explore policies that highlight community participation and educational activities to improve India's Happiness Index.

d) To promote awareness of government schemes aimed at enhancing the Happiness Index.

6. Significance of Study

This study focuses on the factors that led to India having a low Happiness Index while the intention of this research is to promote the awareness of happiness in the nation's general population. The purpose of this study is to increase the awareness about the existence and relevance of the Happiness Index.

This study aims at establishing what is influencing the low Index of Happiness in India, based on income disparity, health, education, and social well-being. It also models the situation in Pune as a microcosm to decode how these factors affect happiness at the macro level for the whole country. In addition, the study examines the government policies which can be beneficial in enhancing the Happiness Index of India.

Furthermore, this research aims at providing theoretical and empirical foundation to a conceptual model for Happiness Increase, which can serve as a blueprint that equips policymakers, educators, and community leaders with procedural frameworks for enhancing happiness. The contribution of the present study remains sincere to enhance positive social changes because of promoting general well-being of individuals as part of a happier society.

7. Research Methodology

This research work includes Qualitative and Quantitative research based on mixed research to get enough data to justify the causes of India's low Happiness Index as aforementioned. To conduct the research described in this paper, there is a restriction to 256 participants only because of limited time. Pune was selected for the survey due to socio-economic heterogeneity, historical and cultural significance, educational and economic potential, as well as being the happiest city in Maharashtra and ranked 12th in India in the India Cities Happiness Index 2020 (Times of India, 2021).

Primary Data:

A survey of 256 participants, they completed self-administered questionnaires covering areas of Happiness Index such as income, health, education, social support, and governance; the sample comprised 0.1% of the Pune's population (32, 000, 000). Due to its socio-economic demography and urban growth, presence of information technology industries, educational institutes and growth-related issues, Pune is suitable region for this research.

Secondary Data:

Secondary data was collected from global, South Asian, and India-specific reports, as well as region-specific research papers, articles, and journals. Collection of data from these sources clarified socio-economic factors that define accessibility to healthcare facilities, education and governance in cities like Pune and other comparable cities and hence, factors which influence well-being and quality of life.

The integration of both primary and secondary data ensures the findings are robust, relevant, and applicable to understanding broader trends impacting happiness in Pune and similar cities across the country.

8. Hypothesis

Hypothesis1: There is no significant difference in the approach to promote the happiness of people in India; the country's approach to promoting happiness does not follow a clear or consistent pattern.

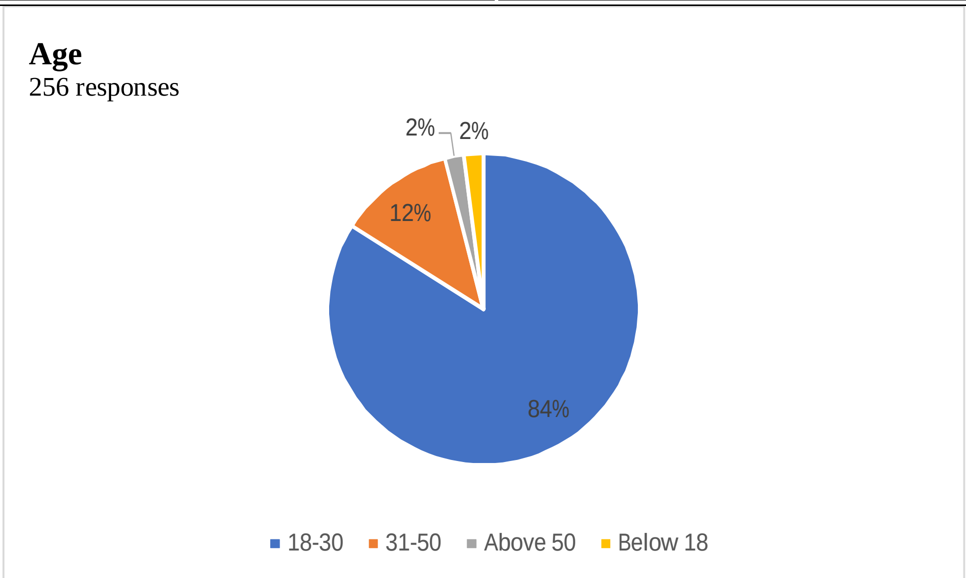
Null Hypothesis1: There is a significant difference in the approach to promote the happiness of people in India; the country's approach to promoting happiness follows a clear and consistent pattern.

Hypothesis2: India's low ranking on the Happiness Index is significantly influenced by the general unawareness of the Happiness Index among the population.

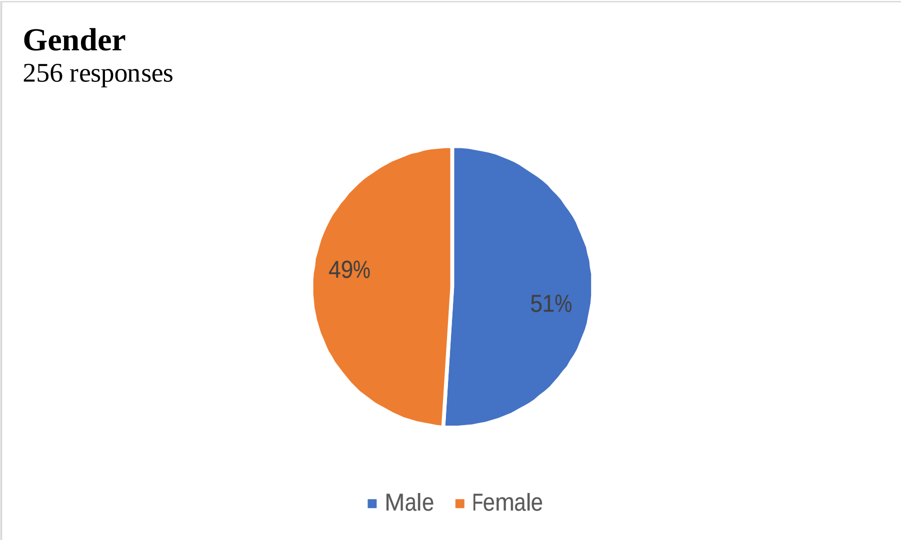
Null Hypothesis2: India's low ranking on the Happiness Index is influenced by unawareness of the Happiness Index, and increasing awareness will improve the ranking.

9. Research Tools and Analysis

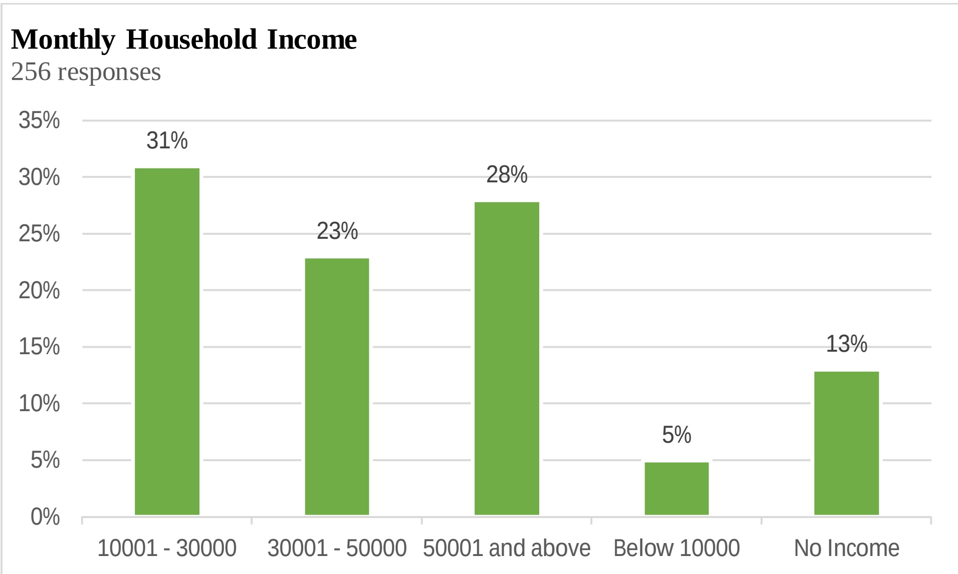
Section	Description
Section 1: Demographic Information	For contextual understanding of respondents.
Section 2: Factors Affecting Happiness	
- Income Inequality	Understanding financial stability and perceptions of wealth distribution. `
- Health	Evaluating access to and satisfaction with healthcare services.
- Education	Assessing accessibility and quality of education.
- Social Welfare	Awareness and effectiveness of welfare programs.
- Trust in Government	Perceptions of governance and corruption.
Section 3: Subjective Well-being	Exploring overall life satisfaction and sources of happiness.
Section 4: Comparison with Neighbouring Countries	Understanding awareness of happiness models and regional comparisons.
Section 5: Recommendations for Improvement	Suggestions for enhancing happiness at the community and national levels.



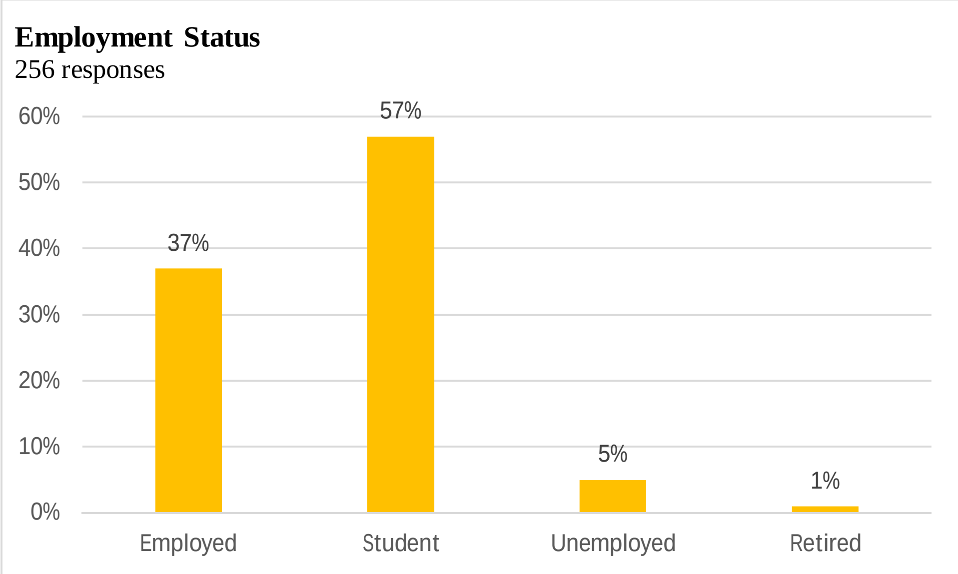
According to the age distribution of 256 respondents. A significant majority (84%) belong to the 18-30 age group, followed by 12% in the 31-50 age group. Only 2% of respondents are above 50, and another 2% are below 18, indicating a predominant representation of young adults.



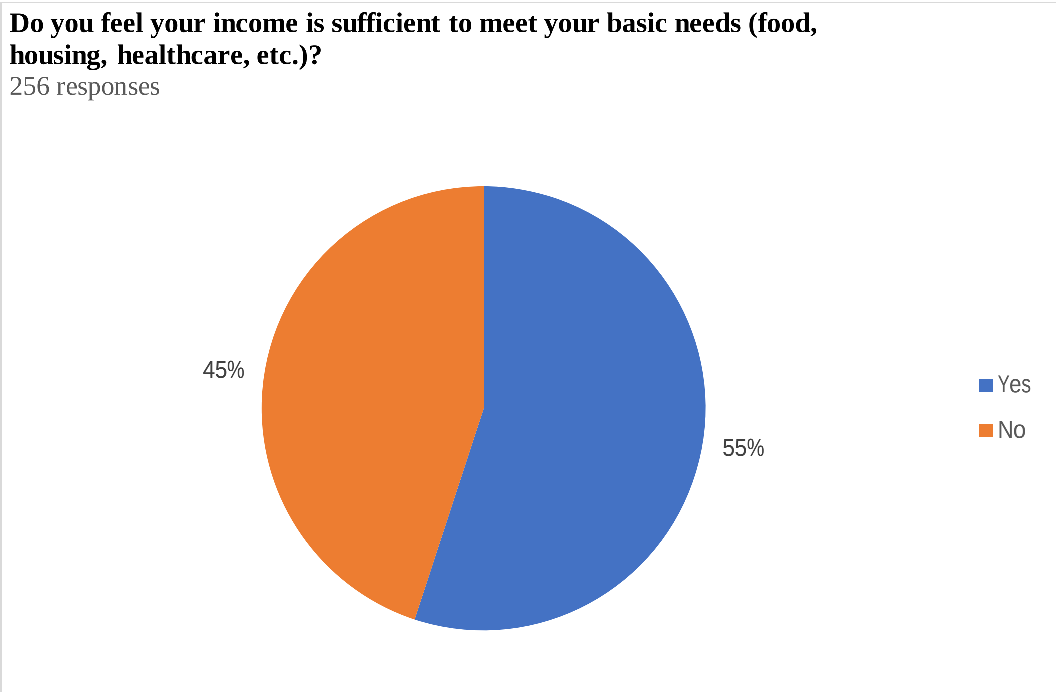
The pie chart shows the gender distribution of 256 respondents, with 51% being male and 49% female, indicating nearly equal representation.



The bar chart represents the monthly household income of 256 respondents. The majority fall within the ₹10,001–₹30,000 range (31%), followed by ₹50,001 and above (28%) and ₹30,001–₹50,000 (23%). A smaller percentage of respondents have an income below ₹10,000 (5%), and 13% report no income. Overall, the data indicates a diverse distribution of household incomes, with a significant proportion in the lower-middle to upper-middle income brackets.

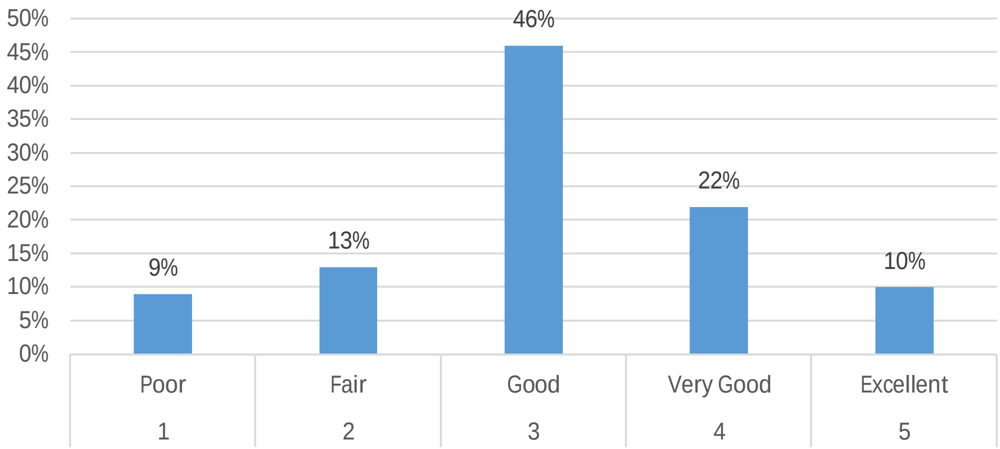


The chart shows that most respondents (57%) are students, followed by 37% who are employed. A small portion of the respondents are unemployed (5%), while only 1% are retired. This indicates that a significant part of the surveyed group consists of younger individuals still in education, with fewer people in the workforce or retired.



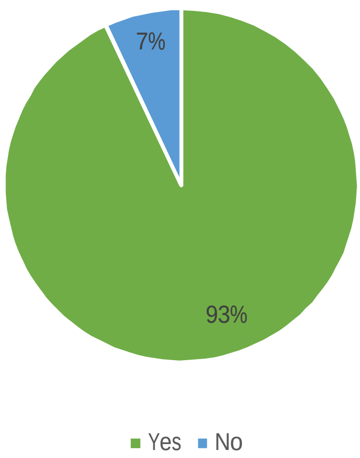
The pie chart shows the responses of 256 individuals regarding whether their income is sufficient to meet basic needs such as food, housing, and healthcare. A majority of 55% reported that their income is adequate, while 45% indicated that it is not sufficient. This reveals that although most individuals manage to meet their essential needs, a significant portion of the population struggles financially, pointing to the existence of economic disparities that require attention.

How would you rate your financial stability on a scale of 1 (poor) to 5 (excellent)?
256 responses

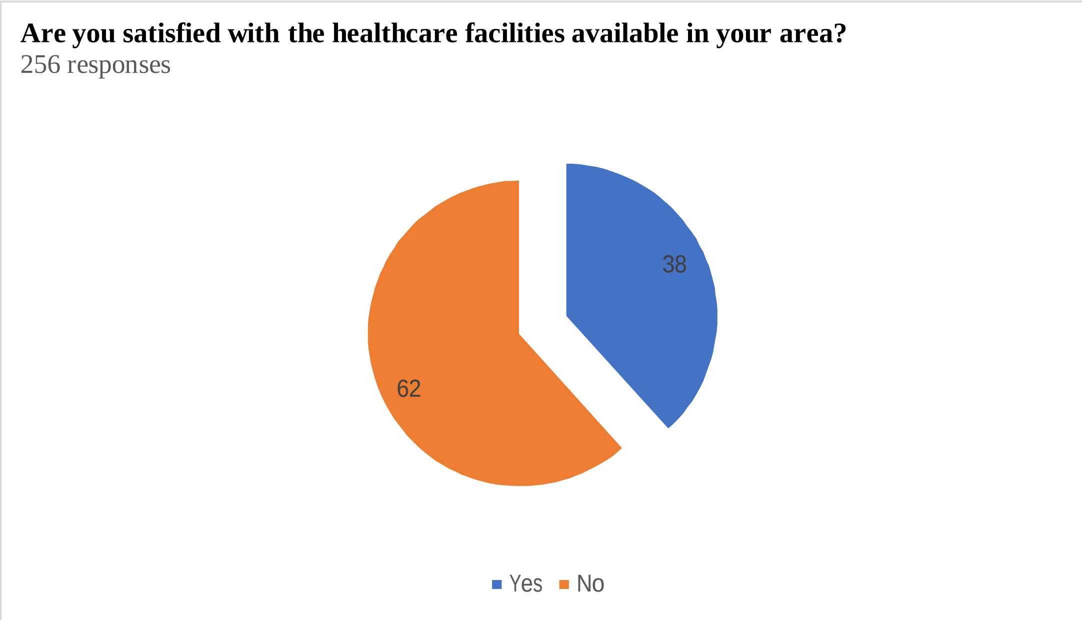


This chart shows how 256 people rated their financial stability on a scale from 1 (poor) to 5 (excellent). The majority (46%) rated their stability as "Good" (3), while 22% rated it as "Very Good" (4), and 10% rated it "Excellent" (5). On the lower end, 13% chose "Fair" (2), and 9% rated it "Poor" (1). This suggests most people feel moderately confident about their financial stability, with fewer experiencing extremes.

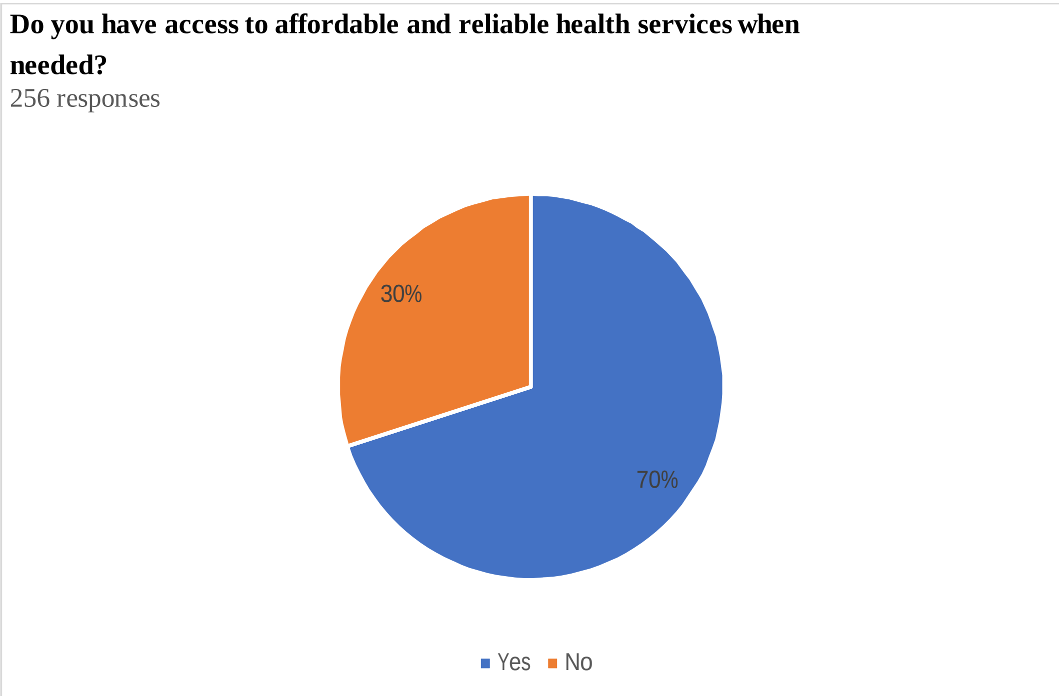
Do you believe there is a significant gap between the rich and the poor in India?
256 responses



This pie chart illustrates the opinions of 256 people on whether there is a significant gap between the rich and poor in India. A vast majority (93%) believe that such a gap exists, while only 7% do not see it as significant. This highlights a widespread perception of economic inequality in the country.



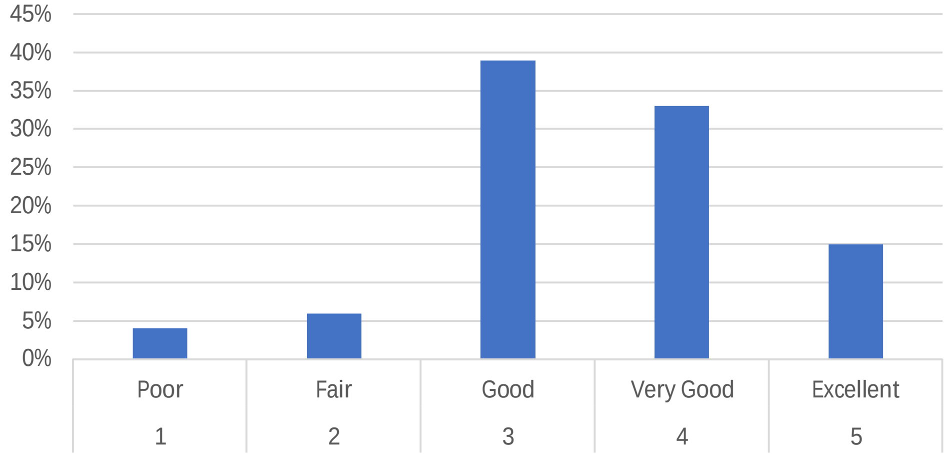
This pie chart shows the satisfaction levels of 256 people regarding healthcare facilities in their area. A majority (62%) are dissatisfied, while 38% are satisfied. This indicates that many individuals feel the healthcare services in their locality need improvement.



This pie chart reflects the responses of 256 individuals regarding access to affordable and reliable healthcare services. The majority (70%) reported having access, while 30% indicated they do not. While most people feel they can access necessary healthcare, a significant minority still faces challenges.

On a scale of 1 to 5, how would you rate your overall physical health? (poor to excellent)

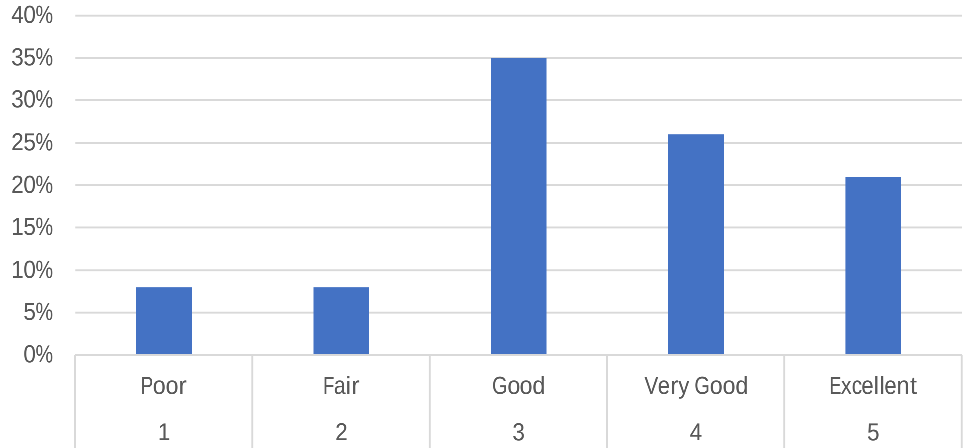
256 responses



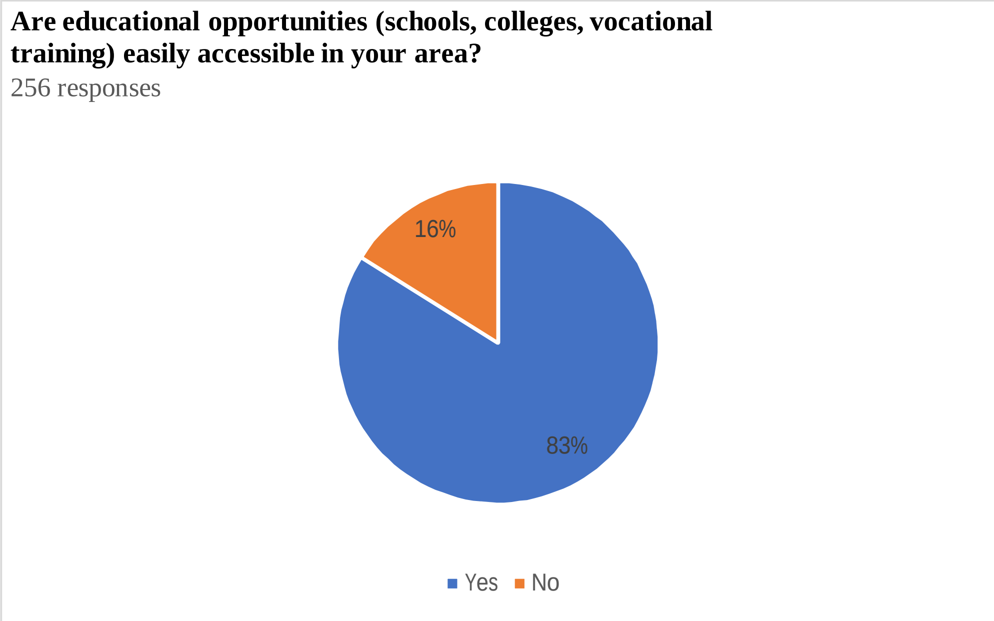
This chart illustrates how respondents rated their overall physical health on a scale from 1 (poor) to 5 (excellent). The majority (39%) rated their health as "Good," followed by 30% rating it as "Very Good," and 15% as "Excellent." On the lower end, 12% rated their health as "Fair," and 4% rated it as "Poor." This highlights that while most respondents view their health positively, a smaller portion faces health challenges.

On a scale of 1 to 5, how would you rate your overall mental health? (poor to excellent)

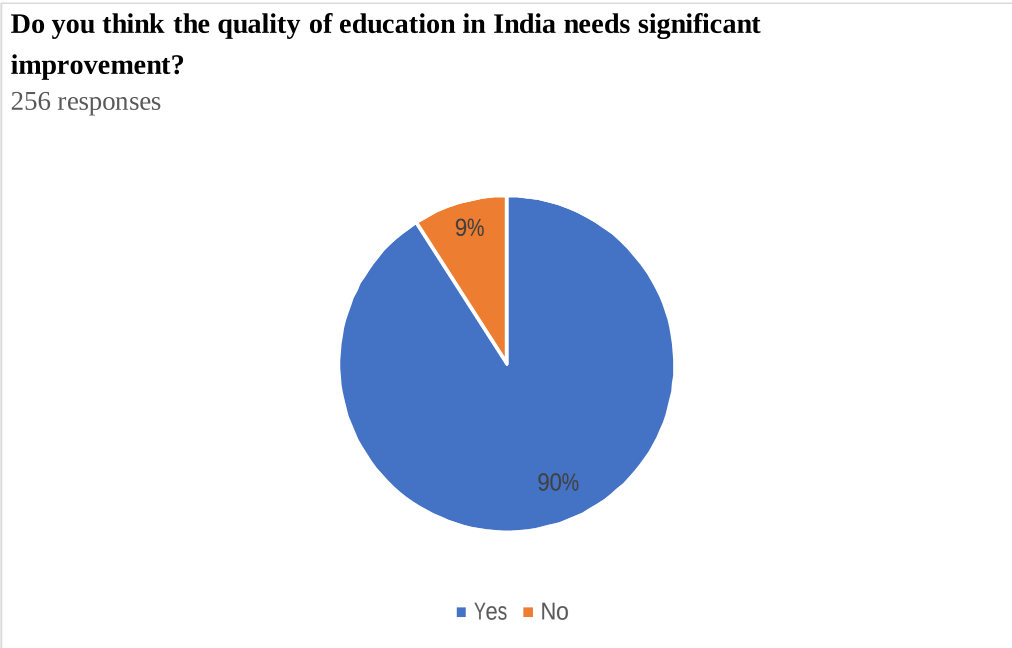
256 responses



This chart represents how respondents rated their overall mental health on a scale from 1 (poor) to 5 (excellent). The majority, 36%, rated their mental health as "Good," while 28% rated it as "Very Good," and 17% as "Excellent." On the lower side, 10% rated their mental health as "Fair," and 9% as "Poor." This indicates that while many respondents perceive their mental health positively, there is still a need to address mental health concerns for a notable minority.

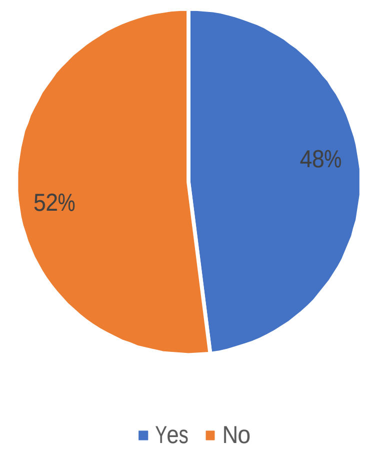


This chart illustrates responses regarding the accessibility of educational opportunities in the respondents' areas. The majority, 83%, indicated that schools, colleges, and vocational training are easily accessible, while 16% reported a lack of access. This highlights that most people have access to education, though some areas still face challenges in this regard.



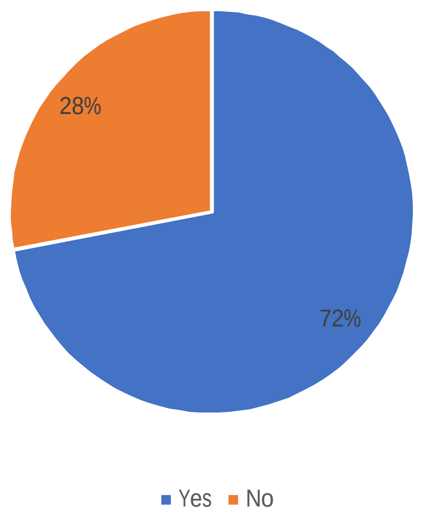
This chart shows opinions on whether the quality of education in India needs significant improvement. A vast majority, 90%, believe that improvements are necessary, while 9% feel otherwise. This indicates a strong consensus on the need for educational reforms in the country.

Are you aware of any social welfare programs or schemes in your area?
256 responses



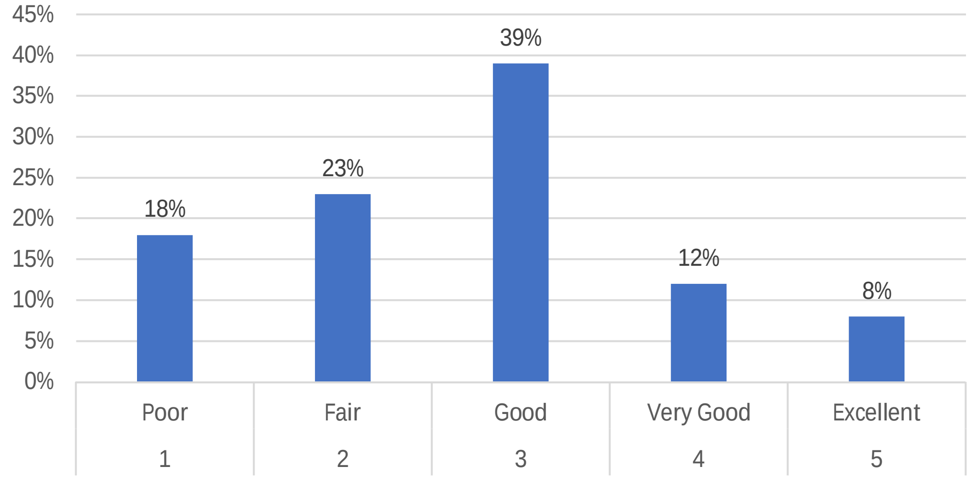
This chart illustrates awareness of social welfare programs or schemes among respondents. A slight majority, 52%, reported not being aware of any such programs, while 48% indicated awareness. This highlights the need for better communication and outreach to inform communities about available social welfare initiatives.

Do you feel these programs are effective in improving peoples lives?
256 reponses



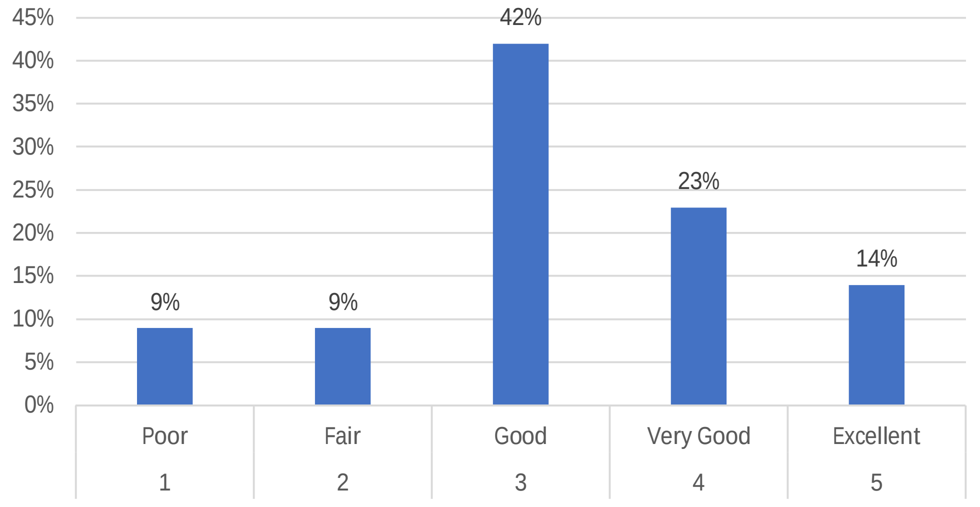
This chart reflects perceptions of the effectiveness of social welfare programs in improving people's lives. A significant majority, 72%, believe these programs are effective, while 28% feel they are not. This suggests that most respondents view these initiatives positively but highlights room for further evaluation and improvement.

On a scale of 1 to 5, how much do you trust the government to address the needs of citizens?
256 responses

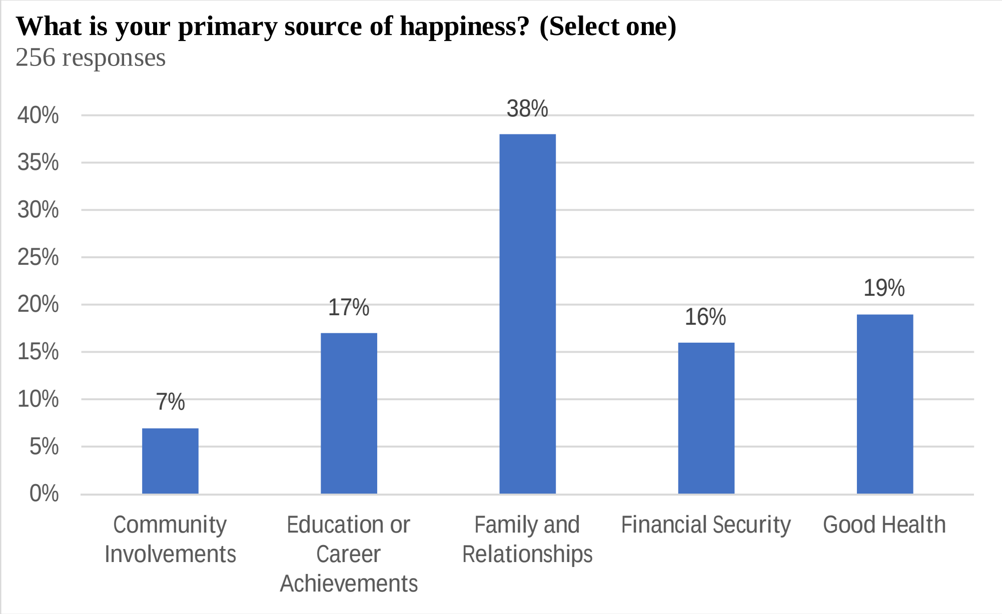


This bar chart illustrates public trust in the government to address citizens' needs on a scale of 1 to 5. The majority rated their trust as "Good" (39%), followed by "Fair" (23%) and "Poor" (18%). Fewer respondents selected "Very Good" (12%) or "Excellent" (8%). The data shows that many people have an average level of trust in the government, but only a few have a high level of confidence in it.

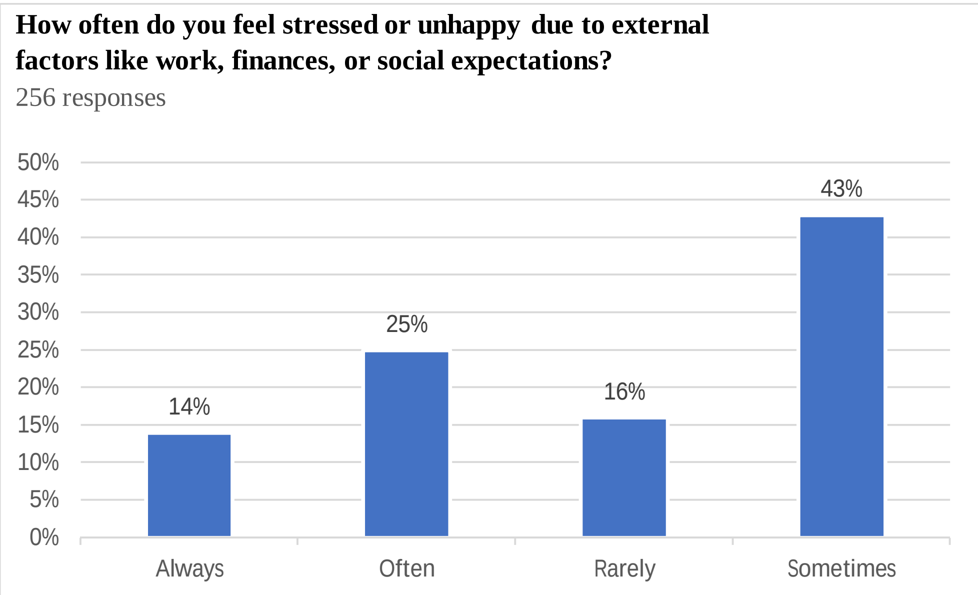
How satisfied are you with your overall quality of life?
256 responses



The chart shows how satisfied respondents are with their overall quality of life. A significant portion, 42%, rated their satisfaction as "Good," while 23% chose "Very Good," and 14% rated it as "Excellent." On the lower end, 9% each rated their quality of life as "Poor" or "Fair." This indicates that most respondents view their quality of life positively, with only a small portion expressing dissatisfaction.



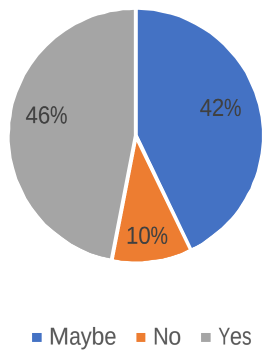
The chart illustrates the primary sources of happiness as identified by respondents. The majority, 38%, find their happiness primarily in "Family and Relationships." "Good Health" follows at 19%, while "Education or Career Achievements" and "Financial Security" are nearly tied at 17% and 16%, respectively. A smaller percentage, 7%, derive their happiness from "Community Involvements." This highlights the central role of close personal connections in shaping overall happiness for most individuals.



The chart indicates how frequently respondents feel stressed or unhappy due to external factors such as work, finances, or social expectations. A significant portion, 43%, experience these feelings "Sometimes," followed by 25% who feel this way "Often." Those who "Rarely" feel stressed account for 16%, while 14% report feeling this way

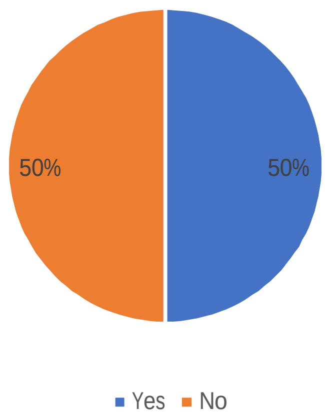
"Always." This data underscores that stress from external pressures is a common experience for many, though its intensity and frequency vary among individuals.

Do you think India can adopt similar measures as other countries to improve happiness, such as community-driven initiatives and environmental conservation?
256 responses



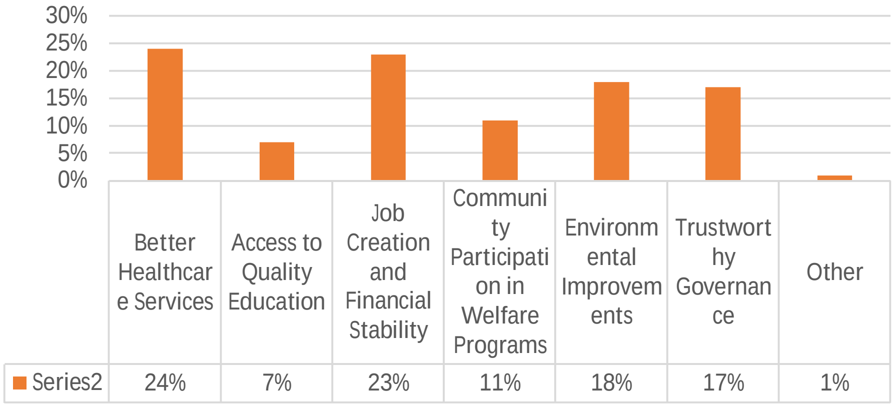
The chart presents opinions on whether India can adopt measures like other countries to enhance happiness, such as community-driven initiatives and environmental conservation. A majority, 46%, believe that such measures can indeed be implemented, while 42% express uncertainty with a "Maybe" response. A smaller portion, 10%, do not think these measures would be feasible or effective. This shows that many people are hopeful about adopting these measures, but some are unsure, and a small group doesn't think it's possible.

Are you aware of India's Happiness Index?
256 responses



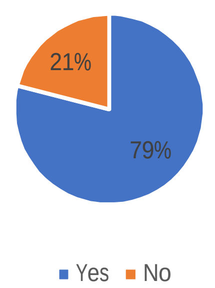
The equal split in awareness about India's Happiness Index highlights the importance of spreading more information and fostering greater understanding of the factors that contribute to happiness and well-being in the country.

What do you think can improve happiness in your community?
256 responses



The responses suggest that the primary factors for improving community happiness include better healthcare services (24%), job creation and financial stability (23%), and environmental improvements (18%). Trustworthy governance is also seen as significant (17%), followed by community participation in welfare programs (11%). Access to quality education (7%) and other factors (1%) received the least emphasis, highlighting a strong focus on basic needs and systemic changes for enhancing overall well-being.

Would you participate in programs aimed at improving happiness in your locality (e.g., volunteering, community events)?
256 responses



Most respondents (79%) expressed a willingness to participate in programs aimed at improving happiness in their locality, such as volunteering or community events, while 21% indicated they would not participate. This shows a strong inclination among individuals to contribute actively to community well-being initiatives.

10. Findings

The findings, highlight the need to improve the quality of life of individuals. The dissatisfaction with healthcare services, 62% of the respondents indicated unsatisfactory services and 30% report a lack of affordable care, indicating inadequate healthcare accessibility. On social facilities, 83% have access to schools & training though 90% feel the quality is insufficient, pointing to significant gaps in educational standards and infrastructure.

There are concerns of Economic difficulty where 45% have issues with basic needs and 93% highlighting income inequality and financial instability. Public awareness of social welfare programs is very important because 72% of the respondents find them effective and beneficial, whereas 52 % of the respondents said that they do not have knowledge of any existing schemes. This shows there is a need to embark on awareness and sensitisation programmes to yield the desired response. Perceived trust in government is average, where only 20% have reported high confidence indicating a gap in governance and transparency.

Mental health issues are severe, and 68% respondents often experience stress underscoring the need for better mental health support. More inspiring is that 79 % of the respondents are willing to participate in local endeavours, including health camps and skill development programs, with a leading focus on health (24%); employment opportunities (23%); and cleanup campaigns (18%). Sustainable Environmental activities such as afforestation and waste management other chlorine necessary measures are foundational elements for enhanced living standards.

11. Conclusions

Government policies and programmes play an important role in handling the socio-economic issues in India which can improve the Happiness Index. For free healthcare services, there is Aapla Dawakhana, and for the Maharashtra state, there is Mahatma Jyotiba Phule Jan Arogya Yojana (MJPJAY) providing financial support in medical treatment and Ayushman Bharat (State Component) for an increased coverage on healthcare. Others include scholarships for marginalized groups of society, the Digital Classrooms Initiative and vocational training among others through Lighthouse Foundation and Swayam Learning. To cure the issue of income disparity, measures such as the Maratha Reservation Initiative and the welfare operations under the Maharashtra Unorganized Workers Welfare Board exist. Measures like the Sanchar Kranti Yojana and the Shramik Kalpataru Yojana improve digital accessibility and workers’ well-being, while urban-centred schemes, as well as the Aaple Sarkar online portal, increase the level of citizens’ trust in the government.

Nevertheless, gaps in awareness, accessibility and the actual applicability and utilization of such schemes reduce their effectiveness especially within rural and marginalized communities. To increase the impact, awareness could be increased through online campaigns and engagement of the community. Electronic governance and distinct social audits can help to accomplish a timely delivery and control over the bureaucracy, as well as for the sustainability of the government, for the poor and vulnerable beneficiaries.

An effort should be made to broaden mental health programs and incorporate more communities and duplicate successful models across states can strengthen the effects. By overcoming these challenges India can work towards improving the quality of life, increase people's trust in governance and lead to healthier, happier citizens.

12. Future Aspects

India's position at 126th on the World Happiness Index has been relatively stable over the past decade, with only slight fluctuations in ranking. India's low ranking on the World Happiness Index presents both challenges and opportunities for growth in the coming years. By addressing systemic gaps in healthcare, education, governance, and economic equality, India can easily move up 110 ranks in the next five years. Therefore, based on the research and the case study of Pune as a microcosm, there are several feasible paths of growth.

Key Predictions and Reforms:

1. **Mental Health Integration**

   Introduce mental health units in every district hospital, train community health workers, and roll out school counselling and workplace wellness programs. Nationwide campaigns can destigmatize mental health issues, aiming for 70% access to affordable mental health care by 2030.

2. **Localized Development Models**

   Tailor urban and rural programs based on regional needs. Urban centres can focus on affordable housing, transport, and community activities, while rural areas emphasize agricultural support, healthcare, and vocational training. Reduce urban-rural disparities by 20% in healthcare and education within five years.

3. **Environmental Rejuvenation**

   Expand afforestation, urban green spaces, and waste management initiatives. Community-driven campaigns can target a 10% increase in urban green cover by 2030, improving environmental and social well-being.

4. **Building Trust in Governance**

   Strengthen participatory governance with citizen councils and feedback mechanisms. Enhance awareness of welfare programs like Ayushman Bharat to increase participation by 30% over five years.

5. **Healthcare Accessibility through Technology**

   Use telemedicine and mobile health units to expand rural healthcare coverage, targeting 80% access in underserved regions by 2030.

6. **Educational Reforms**

   Improve school infrastructure and teacher training to enhance learning outcomes by 15% in five years. Integrate digital and vocational education to bridge gaps between schooling and employability.

7. **Monitoring Happiness Metrics**

   Develop a regional Happiness Index to track progress in mental health, economic stability, and governance trust. Publish biennial reports to guide policy and ensure accountability in improving citizen well-being.

   These targeted reforms can drive sustainable improvements, leveraging localized insights like those from Pune. By scaling such localized efforts nationwide, India can work toward a more inclusive and happier society, potentially improving its Happiness Index ranking in the years ahead.

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MENSTRUAL LEAVE POLICY AND PROBLEMS FACED IN IMPLEMENTATION OF POLICIES

Prof. Surabhi Jain
Assistant Professor, Department of Commerce, Indira College of Commerce and Science, Pune.
surabhi.jain@iccs.ac.in

Ms.Krishita K. Pillai
Student, Indira College of Commerce and Science, Pune.
krishitapillai2005@gmail.com

Ms. Anuj V. Singh
Student, Indira College of Commerce and Science, Pune.

ABSTRACT

Menstrual leave policies have long been a subject of debate, reflecting the challenges of balancing workplace rights, gender equality, and employee well-being. In India, the conversation around these policies is often stifled by cultural taboos and deeply rooted stigmas surrounding menstruation. Historically, these societal attitudes, combined with a lack of legal support and organizational resistance, have made implementation difficult. Many employers worry about productivity, misuse of the policy, or reinforcing gender biases. However, with growing awareness of menstrual health and a shift toward more inclusive workplace practices, the conversation is changing. Countries with progressive cultural attitudes and strong legal frameworks have demonstrated that such policies can enhance employee well-being and productivity. This study delves into the historical, societal, and legal challenges faced in India, while offering practical solutions to pave the way for menstrual leave policies that respect and support employees.

KEYWORDS: Menstrual leave, Menstruation, Menstrual Leave Policy, Workplace Equality, Cultural Taboos, Employee Well-being, Policy Implementation Challenges.

Introduction

Menstruation represents a fundamental biological phenomenon characterized by the cyclical shedding of the uterine lining; a process governed by intricate hormonal interactions. This cycle commences with menarche, which generally occurs between the ages of 10 and 15, and persists until menopause, typically occurring between the ages of 45 and 55. The menstrual cycle, which lasts between 21 and 35 days (about 1 month 9 days), encompasses various phases marked by hormonal changes that may lead to physical symptoms such as cramps, fatigue, and bloating, alongside psychological effects including mood fluctuations and anxiety. Although conditions like Premenstrual Dysphoric Disorder (PMDD) affect a minority of individuals, they can severely disrupt daily activities. These physical and emotional difficulties highlight the necessity for menstrual leave policies in the workplace, enabling individuals to address their health needs without facing stigma or compromising productivity. Acknowledging the implications of menstruation can promote inclusivity and enhance overall well-being. In India, there is a pressing need for legal provisions regarding menstrual leave to protect women from workplace discrimination and to affirm their right to take necessary time off during their menstrual cycles. Such policies should be thoughtfully designed, incorporating clear guidelines for implementation to mitigate concerns regarding potential misuse, while also advancing gender equality in both professional and societal contexts.

Research Objectives:

1. **Examine Societal Barriers:**
   Explore cultural taboos and societal attitudes delaying menstrual leave policies.
2. **Identify Organizational Resistance:**
   Investigate employer challenges and biases against implementation.
3. **Assess Influencing Factors:**
   Analyze legal frameworks and workplace trends driving policy adoption.

Methodology:

The data for this research has been collected through **Google Form**[2], an online survey tool, which enables efficient data gathering from a broad and diverse sample of respondents. This method ensures a high degree of convenience, anonymity, and accessibility for the participants. The survey was distributed to individuals across different industries, organizations, and regions. This research is a blend of pure research & empirical research.

2 https://docs.google.com/forms/d/1q9SgxColf2ZyzEiKgn89Cu8oZwIBygB5KidoKOpWAJI/edit#responses

Limitations:

- The study is based on a self-reported survey, which may introduce **response bias** (e.g., social desirability bias).
- The use of **convenience sampling** may limit the generalizability of the findings to a larger population.
- The survey may not capture the full complexity of menstrual leave policies in different organizational settings due to the simplicity of the instrument.

Hypothesis:

Countries with progressive cultural attitudes and strong legal frameworks successfully implement menstrual leave policies; hence, with evolving cultural perceptions and supportive legal measures, India can effectively adopt such policies to enhance employee well-being and productivity.

Literature Review

In recent years, menstrual leave policies in India have gained significant attention, with various stakeholders discussing their implications. The Hindu reported in "Karnataka govt. invites feedback on six-day menstrual leave policy" (Nov 8, 2024) that Karnataka's Labour Department proposed six days of paid leave, though trade unions advocated for one day per month. Additionally, The Hindu editorial, "A case for menstrual leave" (July 28, 2024), emphasized the health benefits of such policies and advocated a de-gendered approach to recognize inclusivity. An article in The Hindu, "Menstrual leave a must, can't be left to discretion of companies, say employees" (July 15, 2024), highlighted the demand for mandatory menstrual leave, citing an Everteen survey where 73% of women supported such policies. While companies like Swiggy offer two-days-a-month menstrual leave, others remain hesitant due to productivity concerns and a lack of legal mandates. In The Indian Express article, "Row over paid leave for menstruation: How Parliament took up the issue over the years" (Dec 20, 2023), private member bills on menstrual leave were discussed, with Union Minister Smriti Irani cautioning against potential workplace discrimination. At the state level, these articles underscore the complex interplay of health, inclusivity, workplace dynamics, and legislative action surrounding menstrual leave in India.

Conceptual analysis of Menstruation

Menstruation is a natural biological process involving the regular shedding of the uterine lining, controlled by hormonal changes. It begins at menarche, usually between ages 10 and 15, and continues until menopause, typically between ages 45 and 55. The menstrual cycle, lasting 21 to 35 days (about 1 month 9 days), includes phases of hormonal shifts that can cause physical symptoms like cramps, fatigue, and bloating, as well as psychological effects such as mood swings and anxiety. Menstrual leave is a policy that allows women to take paid or unpaid leave during menstruation to manage menstrual discomfort, which can include pain, fatigue, and other health challenges. The concept has been a subject of discussion worldwide, with various countries either implementing or considering such policies to accommodate the unique health needs of women. In India, the issue of menstrual leave has gained traction in recent years, particularly considering public debates and the introduction of legislative efforts to formalize the policy. However, despite some progress, menstrual leave remains a contentious issue.

Evolution

1. **Asia:**

- **China:**

  Introduced menstrual leave in 1988, allowing female workers to take a day off for menstrual health. However, implementation remains inconsistent, with cultural stigma and employer resistance limiting its use.

- **Japan:**

  First introduced menstrual leave in the 1947 Labor Standards Act. While the policy still exists, its use has declined due to workplace stigma, and many women avoid taking leave to prevent being seen as less reliable.

- **Indonesia:**

  Introduced menstrual leave in the 1940s, granting two days off per month. However, enforcement is weak, and many workers are unaware of or discouraged from using the benefit.

- **South Korea:**

  Instituted menstrual leave in 2001, allowing one day of leave per month. Despite this, cultural attitudes and reluctance to use the leave due to potential workplace discrimination remain barriers.

2. **Europe:**

- **Spain:**

  In 2023, Spain became the first European country to introduce paid menstrual leave, granting up to three days off per month. The law has sparked debates about its impact on gender equality, with concerns that it could reinforce workplace stereotypes.

- **Other European Countries:**

  Most European nations, including the UK and France, do not have formal menstrual leave policies. However, some companies are starting to address menstrual health informally as part of their employee benefits.

3. **Global Challenges:**

- **Cultural Stigma:**

  Menstruation is still a taboo subject in many cultures, hindering open discussions and the full implementation of menstrual leave policies.

- **Gender Stereotypes:**

  There is concern that menstrual leave could perpetuate gender stereotypes, making women appear less capable in the workplace.

- **Lack of Enforcement:**

  In countries where menstrual leave exists, inconsistent implementation and low awareness prevent its widespread use.

Challenges Faced

- **Cultural and Social Barriers:**

  Menstrual stigma and cultural taboos persist, affecting the acceptance and implementation of menstrual leave policies (Furlano, 2024; Sukhija & Isher, 2024). Concerns about reinforcing sexist beliefs and individual responsibility for managing menstruation are noted (Furlano, 2024).

- **Workplace Dynamics:**

  Employees often face challenges such as lack of awareness about menstrual leave, inflexible regulations, and the need for medical documentation, which discourage usage (Arora & Nigam, 2018; Bhattacharya et al., 2021). In the U.S., public perceptions include concerns about workplace effects and potential negative stereotypes about women (Barnack-Tavlaris et al., 2019).

Menstrual Leave Policy in India: Evolution

Menstruation has historically been a subject shrouded in stigma within Indian society. For generations, women experiencing menstruation have encountered social ostracism, exclusion from religious practices, and various cultural limitations. These entrenched taboos have permeated workplace environments, where menstruation has been regarded as a private matter, rarely discussed in public forums. The prevailing lack of understanding regarding menstrual health and hygiene, compounded by the cultural shame associated with menstruation, has hindered women's ability to advocate for necessary leave related to their menstrual health.

The initial steps toward formal acknowledgment of menstrual health in India emerged from the efforts of feminist movements and labor rights advocates between the 1970s and 1990s. As women's involvement in the workforce increased during this period, there was a growing demand for enhanced gender equality in workplace policies. Nevertheless, despite heightened awareness, there remained a lack of definitive laws or policies that recognized the need for menstrual leave, with the issue often relegated to private discussions and minimal public engagement.

In the 1990s and early 2000s, a handful of progressive organizations, particularly within the private sector, began to informally implement menstrual leave as part of their employee benefits. These policies were typically inconsistent, with varying amounts of leave granted across different companies. However, such initiatives were not widespread, and many women hesitated to utilize menstrual leave due to concerns about potential judgment or negative impacts on their professional standing. A notable advancement occurred in 2017 when the state of Kerala became one of the first regions in India to advocate for menstrual leave at the governmental level.

The introduction of a policy granting female government employees one day of paid menstrual leave each month marked a significant milestone in acknowledging the importance of menstrual health and addressing the challenges women face in the workplace. This policy represented a progressive step toward normalizing discussions around menstruation and supporting women's rights in professional settings.

The initiative undertaken by Kerala in the late 2010s garnered significant acclaim; however, it also ignited considerable controversy. Detractors contended that these policies might unintentionally perpetuate gender stereotypes, portraying women as less competent or more likely to be absent from work compared to men. Concerns were voiced by employers across both public and private sectors regarding potential declines in productivity and the risk of menstrual leave being exploited. Consequently, the discourse surrounding menstrual leave became highly divisive, with proponents and opponents presenting compelling arguments on either side.

Present State of Menstrual Leave Policy in India

- **Prevalence and Implementation:**

  Menstrual leave is a highly debated topic in India, with some companies beginning to implement such policies. However, there is no comprehensive national policy mandating menstrual leave, and its adoption varies widely across different organizations (Pal et al., 2023; Bhattacharya et al., 2021).[3]

- **Employee Perceptions:**

  Research indicates that both male and female employees generally support the idea of menstrual leave. However, women often hesitate to utilize these leaves due to concerns about fairness and potential stigma (Marathe & Raj, 2020; Bhattacharya et al., 2021).[4]

Challenges Faced by Women in Society

- **Cultural Taboos and Period Poverty:**

  The absence of a uniform menstrual leave policy in India is compounded by cultural taboos and period poverty, which affect the socio-economic well-being of menstruators. These issues highlight the need for inclusive policies that address both the health and socio-economic aspects of menstruation (Sukhija & Isher, 2024).

- **Workplace Inclusivity:**

  While workplaces are becoming more inclusive, there is still a lack of sensitivity towards the unique needs of menstruating employees. The debate in the Indian parliament about menstrual leave reflects the ongoing struggle to balance workplace inclusivity with the specific needs of women (Bhattacharya et al., 2021).

Global approach

- **International Comparisons:**

  Globally, menstrual leave policies vary significantly, with some countries offering more comprehensive entitlements than others. This disparity underscores the need

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[3] Pal, S., Sutradhar, P., Issac, D., & Krithika, J (2023). IMPLEMENTATION OF MENSTRUAL LEAVE POLICY IN INDIAN COMPANIES. *INTERANTIONAL JOURNAL OF SCIENTIFIC RESEARCH IN ENGINEERING AND MANAGEMENT*. https://doi.org/10.55041/ijsrem26152

[4] Marathe, S., & Raj, V. (2020). Perceptions of Menstruation Leave Policy among the Future Workforce. **, 40, 104-112.

for a broader, more inclusive approach to menstrual health and workplace policies (Sukhija & Isher, 2024; Furlano, 2024).

- **Potential Benefits and Drawbacks:**

  The introduction of menstrual leave policies can help normalize menstruation and reduce stigma. However, there is also a risk that such policies might reinforce sexist beliefs or place the responsibility of managing menstruation solely on individuals, rather than fostering a supportive workplace culture (Furlano, 2024).

Legal Frameworks

- **Legislative Developments:**

  Some countries have integrated menstrual leave into labor laws, such as Spain, which has brought attention to the need for such policies in European labor law (Reljanović & Ćalić, 2024). However, there is no international labor law standard for menstrual leave (Reljanović & Ćalić, 2024).[5]

- **Policy Recommendations:**

  Recommendations include creating supportive environments, flexible leave policies, and educational initiatives to improve menstrual health management in workplaces (Arora & Nigam, 2018; Sommer et al., 2016).[6]

Implementation Across Countries

- **Global Variations:**

  Menstrual leave policies are recognized in various countries, notably in Asia and recently in Spain, but are not yet standardized internationally (Reljanović & Ćalić, 2024; Yu, 2024). In China, despite regulations existing for 30 years, full implementation remains inconsistent due to workplace constraints and ongoing debates (Yu, 2024).

- **Case Study:**

  In the year 2022, a desk review was undertaken across two workplaces based in Kenya to assess some of the gaps that support MHH among the working members

[5] Reljanović, M., & Ćalić, J. (2024). MENSTRUAL LEAVE AND GENDER EQUALITY. *Strani pravni život*. https://doi.org/10.56461/spz_24101kj

[6] Arora, D., & Nigam, A. (2018). Menstrual Leave – the Next Work-Life Benefit. *The International Journal of Management*, 16, 63-70.

of the organizations. The results of the analysis showed several constraints which ‘the employees claimed affected them.:

i. **Hiring and Induction Processes:**

ii. These processes didn't provide or cover MHH components hence no assistance would be given to menstruating employees on such occasions.

iii. **Employee Classification:**

iv. The M classification was not designed for Kyara’s consideration of the menstruation STI and resources that an employee may use or be provided with.

v. **Representation and Voice:**

vi. The participation of women in the leadership of organizations was less adequate and this meant that policies to favor MHH were hard to come. To a certain extent, the complete unavailability of adequate toilet facilities, where care for breath control is reasonable, hindered the loss of efficient management of menstruation by the employees during the time of working hours.

vii. **Sick Leave:**

viii. In medical problems excluding these were not related to MHI the policy did not address issues of absenteeism from work and possible negative health outcomes or Hygiene issues.

ix. **Supervisor Codes of Conduct:**

x. At the management level, supervisors had no codes of conduct that would have guided them in aiding menstruating employees hence the way employees were set up in the workplace was not supportive the facility did not meet working mothers Hygi and other support networks and systems expectations, and this led to caregivers being unreliable. Looking to the future, the study suggested several recommendations concerning policy change.

Background of the Bill

- **Draft menstrual hygiene policy 2023:**
  it recognizes the need to address the issue of gender discrimination and create an enabling work environment that supports leaves and work-from-home options.
- **The Right to Women to Menstrual Leave and Free Access to Menstrual Health Products Act, 2022.:**
  A private member bill proposing paid menstrual leave of three days in any establishment registered with the government.

- **Women's Sexual, Reproductive, and Menstrual Rights Bill, 2018:**

  A woman to complete wages during the period of menstruation subject to a maximum of 3 days per month for a working woman and of 3 days for non-working women including students.

- **THE RIGHT TO MENSTRUAL HYGIENE AND PAID LEAVE BILL, 2019:**

  Every employer shall be liable for providing three days of paid leave and the payment of adequate wages, overtime allowance, and relevant salary to the female employees and other rights under the provisions of this Act;

- **The Menstrual Benefit Bill 2017:**

  It seeks to provide working women with two days of paid menstrual leave every month. It applies to women working in both public and private sectors. The Bill also seeks to provide better facilities for rest at the workplace during menstruation.

Key Challenges in Implementation

- **Cultural Stigma and Taboos**:

  Menstruation is often considered a private or taboo subject, making it difficult for women to discuss or request menstrual leave without fear of stigma or embarrassment. This is particularly evident in regions like the UAE, Kuwait, and Afghanistan, where cultural norms may discourage open discussion about menstruation (Hashimy, 2023; Sukhija & Isher, 2024).[7]

- **Lack of Awareness and Understanding**:

  Many employees and employers are not fully aware of the regulations surrounding menstrual leave or how to implement them effectively. This lack of understanding can lead to underutilization of the policy, as seen in countries like Indonesia and India, where women are often unaware of their rights or how to apply for menstrual leave (Rhuina & Kornelis, 2024; Pal et al., 2023).[8]

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[7] Hashimy, S. (2023). The Legal Paradigm of Menstrual Leaves Policy in the United Arab Emirates, Kuwait, and Afghanistan. *Journal of Disease and Global Health*. https://doi.org/10.56557/jodagh/2023/v16i18159

[8] Rhuina, Y., & Kornelis, Y. (2024). Analisis Yuridis Implementasi Pemenuhan Hak Cuti Haid Bagi Pekerja Perempuan Terkait Undang-Undang No. 13 Tahun 2003. *Ilmu Hukum Prima (IHP)*. https://doi.org/10.34012/jihp.v7i1.5303

- **Discrimination and Workplace Dynamics**:

  There is a risk that menstrual leave policies can lead to discrimination against female workers. Women may face verbal or economic violence, or be perceived as less capable, which discourages them from taking leave (Widyani, 2022; Barnack-Tavlaris et al., 2019).[9]

- **Policy and Legal Frameworks**:

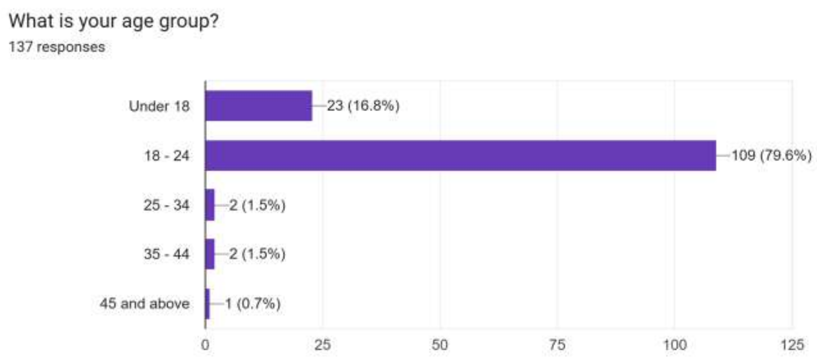
  In some regions, the legal frameworks supporting menstrual leave are either weak or non-existent, making it difficult to enforce such policies. This is a significant issue in countries where legal recognition of menstrual leave is scarce (Hashimy, 2023; Sukhija & Isher, 2024).[10]

- **Organizational Challenges**:

  Companies may face logistical challenges in implementing menstrual leave, such as needing medical receipts, lack of flexibility in leave policies, and concerns about job coverage during absences. These issues can deter women from utilizing menstrual leave (Arora & Nigam, 2018; Fry et al., 2022)

Data Analysis of Views on Menstrual Leave Policy

Menstruation is experienced by females aged 10 to 45, hence the researcher has taken data from the females belonging to that age group. The first category is an umbrella category for females below 18 years as, the commencement of menstruation in females may vary according to the weight, food, hormone balance, stress, etc.

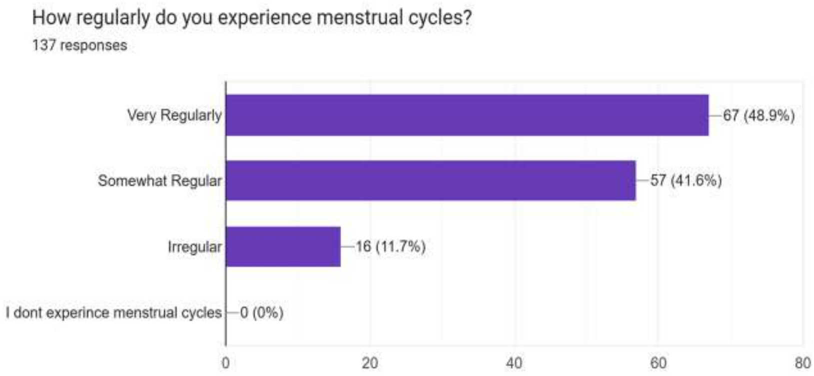


[9] Widyani, I. (2022). Menstrual Leave Policy; Between Gender Sensitivity and Discrimination Against Female Workers. *Technium Business and Management*. https://doi.org/10.47577/business.v2i2.6754

[10] Hashimy, S. (2023). The Legal Paradigm of Menstrual Leaves Policy in the United Arab Emirates, Kuwait, and Afghanistan. *Journal of Disease and Global Health*. https://doi.org/10.56557/jodagh/2023/v16i18159

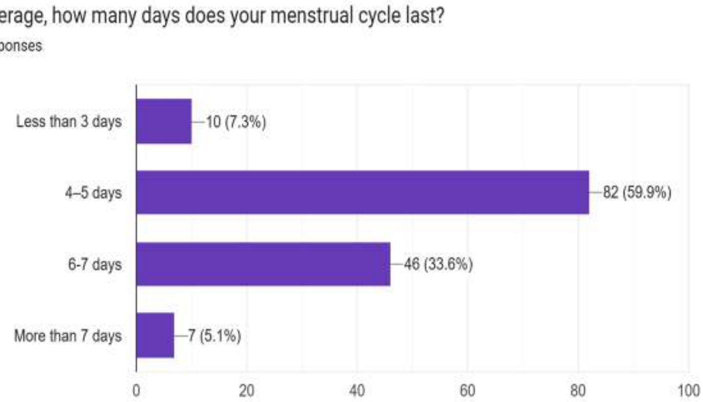
The chart shows that most respondents (79.6%) are aged 18–24, followed by 16.8% under 18. Minimal participation comes from the 25–34 (1.5%), 35–44 (1.5%), and 45-and-above (0.7%) groups, indicating a strong skew toward younger individuals.

The researcher has posted this question to understand the impact of stress, pressure, food, and physical activities on the regularity of the cycle. This regularity generally varies due to extreme stress and physical activities in the workplace.



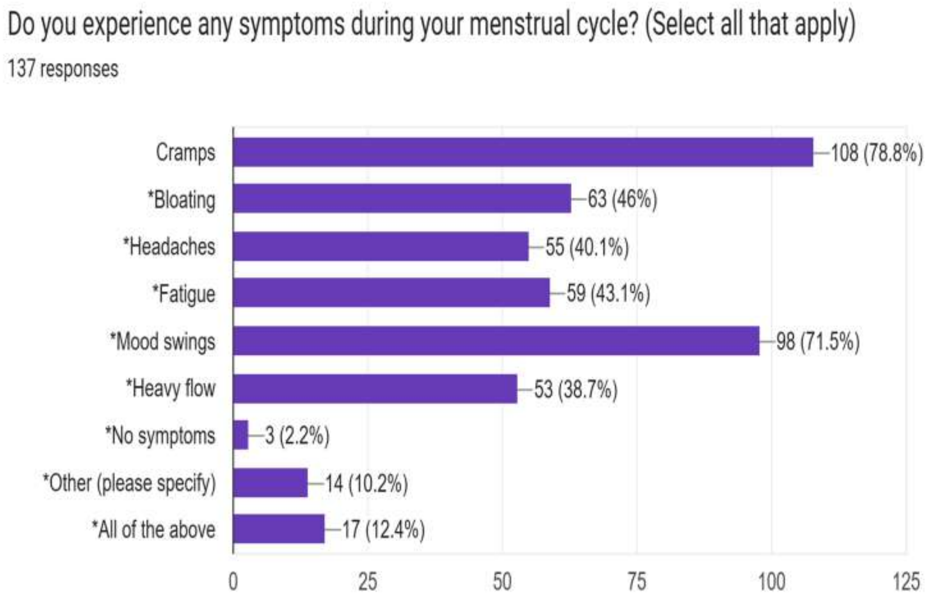
The chart illustrates the regularity of menstrual cycles among 137 respondents. A significant proportion, 67 individuals (48.9%), report experiencing menstrual cycles "Very Regularly," while 57 respondents (41.6%) describe them as "Somewhat Regular." A smaller group of 16 respondents (11.7%) report having "Irregular" cycles. Notably, no respondents indicated that they do not experience menstrual cycles. This data shows that the majority experience consistent menstrual patterns, with a smaller subset facing irregularities.

The researcher posts this question as it aims to understand the average health of a female. The menstrual cycle generally is for 5-6 days. But, due to various factors, it may either increase or decrease which are both painful to the female.



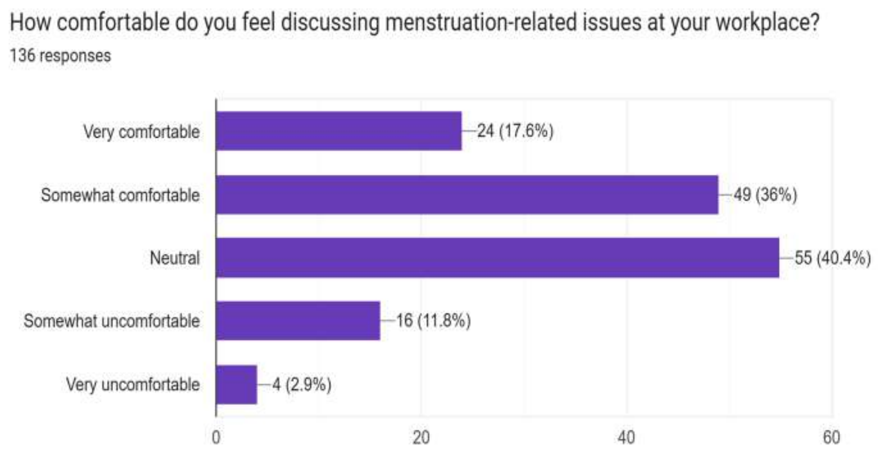
The chart shows the average menstrual cycle duration based on responses from 137 individuals. Most respondents (59.9%) reported a cycle lasting 4–5 days, followed by 33.6% experiencing 6–7 days. A smaller percentage reported cycles lasting less than 3 days (7.3%) or more than 7 days (5.1%). This indicates that the majority fall within the typical range of 4–5 days, while a minority experiences significantly shorter or longer cycles.

The researcher posts this question to understand the levels and kinds of pain during the cycle.



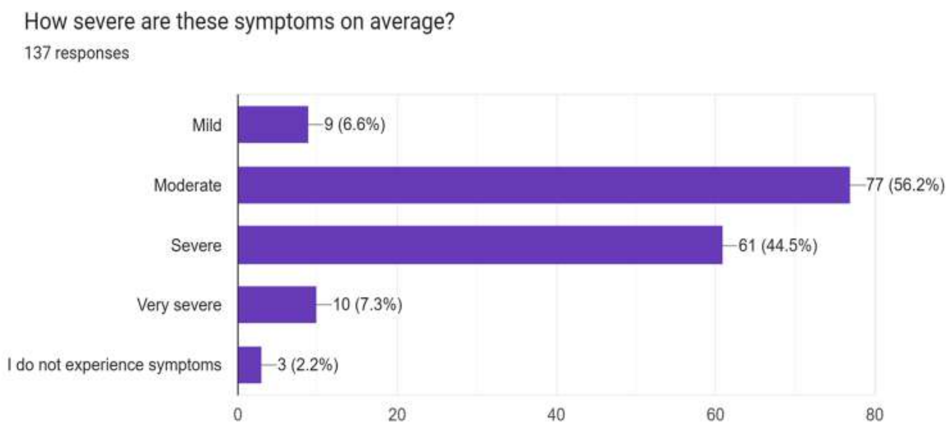
The chart displays symptoms experienced during the menstrual cycle, based on 137 responses. The most common symptoms reported are cramps (78.8%) and mood swings (71.5%). Other frequently mentioned symptoms include bloating (46%), fatigue (43.1%), headaches (40.1%), and heavy flow (38.7%). A small number of respondents (2.2%) reported no symptoms, while 12.4% selected "all of the above," and 10.2% indicated other unspecified symptoms. This highlights that cramps and mood swings are the most prevalent, while a minority experience minimal or no symptoms.

Since menstruation was considered as a disgust of the society, it was a taboo. The leave in any company is handled by an HR, and it may be a female or a male; the females may not be comfortable sharing their cycle with their male colleagues. The researcher posts this question to understand the mentality of women in general and the level of comfort they have in sharing their cycle ina professional environment.



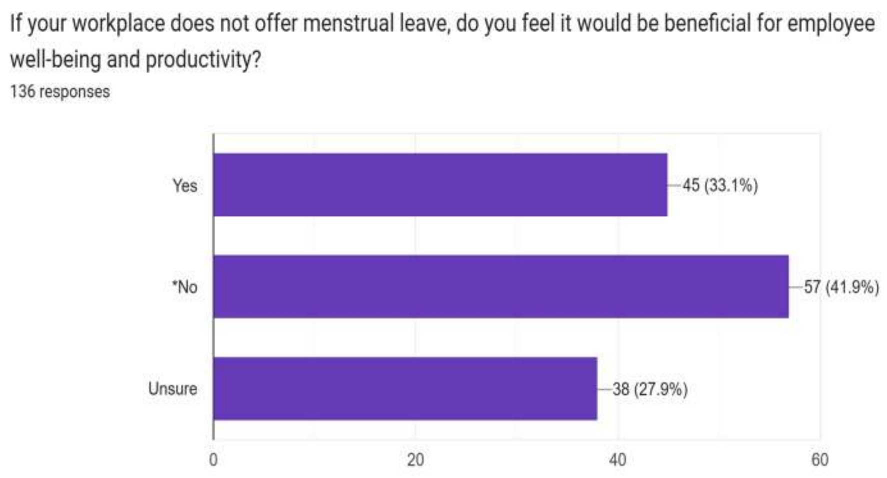
The chart illustrates the comfort of discussion related to menstruation at workplace among 137 respondents. A significant proportion, 55 individuals (40.4%), report experiencing that they are "Neutrally" comfortable about talking about it in public whereas 19 (36%) individuals are somewhat comfortable discussing menstruation-related issues at work. However, a notable portion feels uncomfortable (14.7% collectively), pointing to lingering discomfort and stigma around the topic.

The researcher posts this question to ensure the ability of women to work comfortably in their workplace without compromising their productivity.



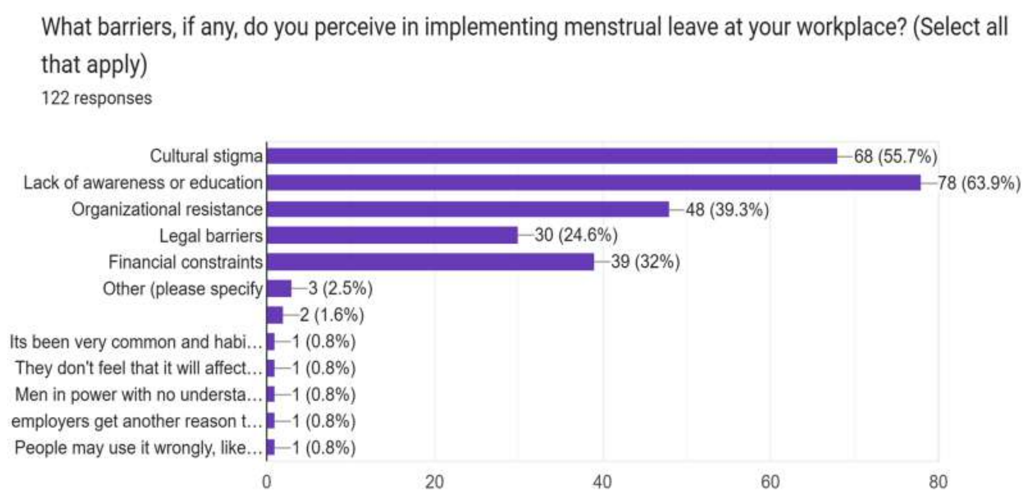
The chart illustrates the severity of menstrual symptoms among 137 respondents. Most (56.2%) rated their symptoms as moderate, while 44.5% described them as severe. Only 7.3% reported experiencing very severe symptoms, and 6.6% considered their symptoms mild. A small portion (2.2%) indicated they do not experience any symptoms. This data shows that most individuals endure moderate to severe symptoms, with very few reporting mild or no discomfort.

The researcher posts this question to understand the want of women and girls in general for a leave during menstruation cycle.



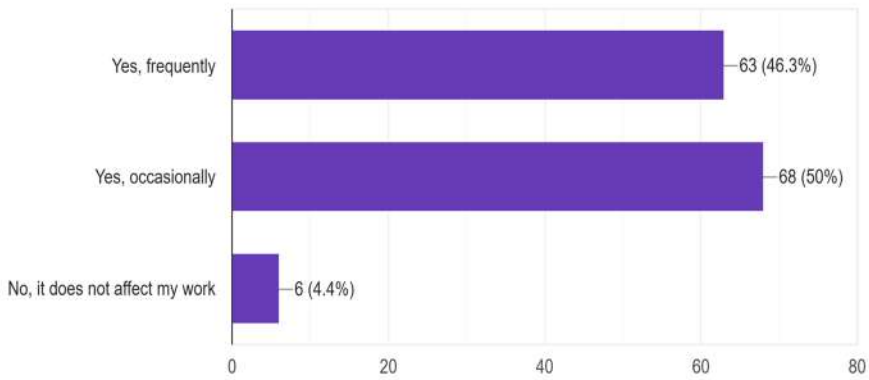
A significant proportion (41.9%) of respondents do not feel menstrual leave would benefit employee well-being and productivity, while 33.1% believe it would, and 27.9% remain unsure. This highlights a divided opinion on the value of menstrual leave.

This question shall allow the researcher to suggest some recommendations for the leave policy in India.



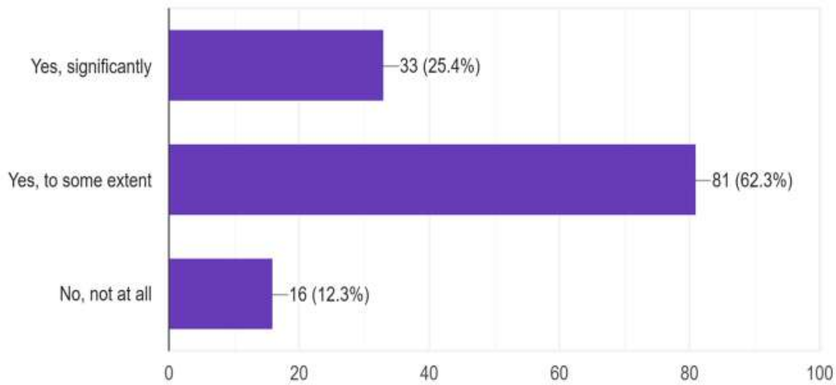
The most frequently cited barriers are lack of awareness or education (63.9%) and cultural stigma (55.7%), followed by organizational resistance (39.3%) and financial constraints (32%). Legal barriers were less frequently identified (24.6%), suggesting that societal and organizational attitudes may play a bigger role than legislative challenges.

Do you find that your menstrual cycle affects your productivity or efficiency at work?
136 responses

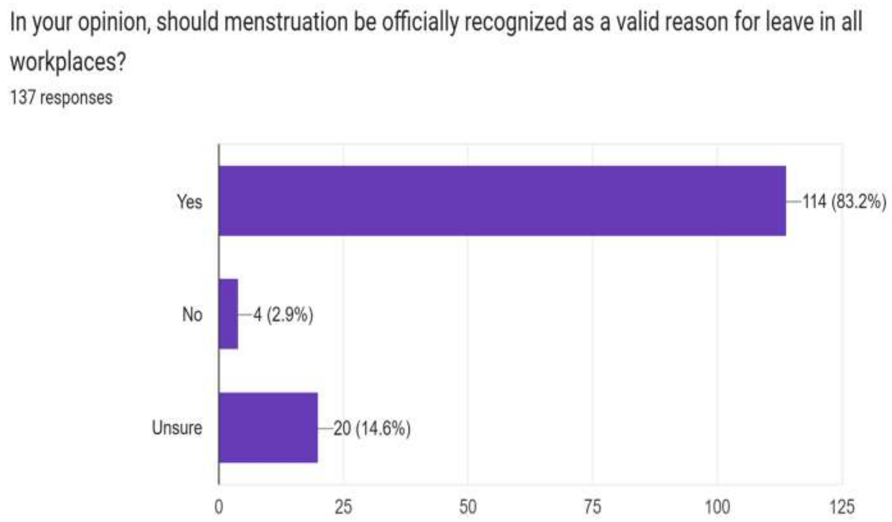


The chart shows the effect on productivity or efficiency at work based on responses from 137 individuals. Most respondents (50%) reported that a cycle occasionally affects their performance, followed by 46.6% experiencing a frequent effect of menstrual cycle on their productivity or efficiency. A smaller percentage reported cycles do not affect their productivity (4.4%), suggesting that the menstrual cycle occasionally affects their productivity.

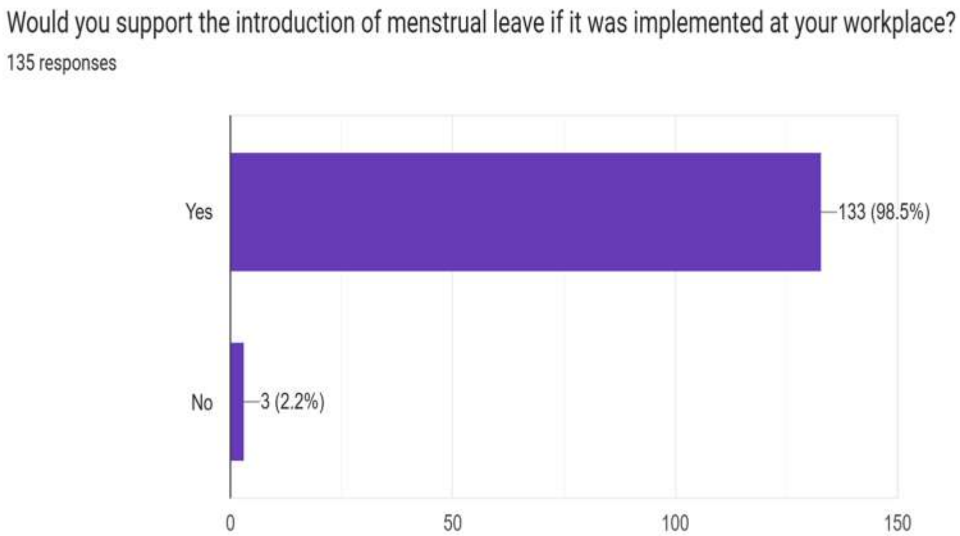
Do you think cultural perceptions of menstruation influence how employee's are treated at work?
130 responses



The chart shows that 62.3% of respondents believe cultural perceptions of menstruation influence how employees are treated at work to some extent, while 25.4% feel the impact is significant. This indicates that societal attitudes around menstruation play a noticeable role in workplace dynamics. Only 12.3% believe these perceptions have no impact, suggesting that the majority acknowledge the influence of cultural norms on treatment and policies related to menstruation in professional settings.



The chart shows that 83.2% of respondents believe menstruation should be officially recognized as a valid reason for leave in workplaces, reflecting strong support for gender-sensitive policies. However, 14.6% are unsure, possibly due to a lack of awareness or concerns about feasibility, and only 2.9% oppose the idea, suggesting minimal resistance to such recognition.



The chart shows overwhelming support (98.5%) for implementing menstrual leave if introduced in the workplace, with only (2.2%) opposing it. This suggests that while some may be hesitant about the concept in theory, nearly everyone is willing to embrace it when it comes to actual implementation, highlighting a positive attitude toward workplace inclusivity and employee well-being.

Findings:

The research demonstrates the widespread support for menstrual leave policies, which shows that the acceptance of gender-sensitive workplace practices is on the rise. Nevertheless, there are still significant obstacles that hinder policy implementation, such as deeply rooted social stigma, narrow knowledge, and resistance at the organizational level. A plethora of females encounter hormonal imbalances, and thus moderate to severe symptoms that could impair their work performance, even though societal taboos and unwillingness to ease the talk on menstruation in a workplace setting are still deterrents. To deal with these problems, companies should implement leave policies that are flexible, launch educational and awareness-raising programs that can destigmatize menstruation, and establish completely inclusive support systems, such as access to menstrual health amenities, etc. Legal reforms and incentives including financial rewards for organizations, especially the smaller enterprises, are another strategic tool for promoting further policy uptake. Improving such gender-based and organizational barriers can produce an environment that prays on employees' lives and money and breeds a more balanced workplace culture.

Conclusion

The successful implementation of menstrual leave policies requires addressing cultural stigmas, increasing awareness and understanding, tackling potential discrimination, and strengthening legal and organizational frameworks. Although the discourse around menstrual leave in India is evolving with growing support from employees and advocacy groups, the lack of a standardized policy and cultural challenges remain significant barriers. By overcoming these challenges through inclusive and equitable policies, workplaces can create a more supportive environment for menstruating individuals, promoting gender equality, enhancing workplace inclusivity, and improving overall well-being (Pal et al., 2023; Sukhija & Isher, 2024; Marathe & Raj, 2020; Bhattacharya et al., 2021; Furlano, 2024).

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STUDY THE INFLUENCE OF ONLINE FINANCIAL EDUCATION ON FINANCIAL LITERACY & DECISION-MAKING AMONG WORKING PROFESSIONALS

Amol Dattatraya Gaikwad
Research Scholar, and assistant professor, Department of Commerce Indira College of Commerce & Science, Pune
amol.gaikwad90@iccs.ac.in

Dr. Sourabh Ganesh Pandey
Registrar Indira College of Commerce and Science, Pune
saurabh.pandey@iccs.ac.in

Abstract:

People's financial decision-making is greatly influenced by their level of financial literacy. This study examines the impact of how working professionals' financial literacy and decision-making are affected by online financial education. The study investigates the effectiveness of online courses in enhancing financial knowledge, confidence, and behavioural outcomes using a survey-based methodology with the response from 179 Participant. The study understand how online courses dominate financial knowledge, confidence, behavioural results. The Results discloses that organised online financial education generates noticeable discrepancy in financial literacy is indicated by the range of 1.52 to 3.33, underscoring the necessity of specialized educational initiatives to assist those with lower scores while testing those with higher proficiency.

The main conclusions show that working professionals who participate in structured online learning have greater levels of financial literacy and make better financial decisions. In order to optimize the impact of online financial education, the study also offers suggestions for improvement.

Keywords: - Financial Literacy, Financial Education, Financial behaviours,

Introduction

Nowadays, being financially literate is essential for both career and personal success. Financial literacy, which is defined as the capacity to comprehend and apply financial ideas in day-to-day life, affects choices about risk management, investing, saving, and budgeting. The need of financial literacy has increased in an increasingly complicated financial environment, especially for working professionals attempting to achieve long-term stability and growth while navigating a variety of financial obstacles.

Online financial education has become a popular and accessible way to improve financial literacy as a result of the digital revolution, which has changed how people access and consume information. Working professionals can gain financial information in a flexible way through online courses, which will help them make wise decisions and properly manage their personal finances. This pattern is in line with the global movement for financial empowerment and inclusion, which places a strong emphasis on giving people the tools they need to become resilient and financially independent.

Online learning is the perfect way for working professionals, who are frequently limited by time and obligations, to strike a balance between their need to upskill and their personal and professional obligations. From fundamental financial principles to sophisticated investment strategies, these courses usually provide self-paced, modular information.

Professionals who take such courses hope to fill up knowledge gaps in the area of finance and use that information to accomplish both personal and professional objectives.

The degree of financial literacy is inextricably tied to financial decision-making. People who have a firm grasp of financial concepts typically make more assured, accurate, and advantageous choices. For example, they are more likely to avoid common hazards like excessive debt or impulsive spending, invest in diversified portfolios, and develop realistic budgets. On the other hand, poor financial literacy can result in poor choices, financial strain, and long-term financial difficulties.

This study focuses on how working professionals' financial literacy and decision-making are affected by online financial education. It seeks to investigate how taking online courses might increase one's financial literacy and self-assurance, and how these gains can lead to better financial outcomes and behaviors. The study aims to answer important queries like:

How financially literate are working professionals who take part in online financial education today?

What impact does online education have on their ability to make financial decisions?

What are the drawbacks and restrictions of depending solely on online learning to raise financial literacy?

For professionals, educators, and legislators, the study's conclusions have important implications. Stakeholders may create focused interventions that optimize learning outcomes and promote long-term financial well-being by knowing how successful online financial education is. Additionally, the knowledge acquired can guide the creation of all-encompassing educational frameworks that cater to the many requirements of working professionals in the digital era.

The format of this document is as follows: An overview of the body of studies on online learning, financial literacy, and decision-making is given in the literature review. The research design, sample selection, and data collection techniques are described in the methodology section. The findings are examined in detail in the results and discussion, which emphasize the connection between better literacy and decision-making and online financial education. Lastly, the conclusion outlines the main conclusions and makes recommendations for further study.

This study highlights the revolutionary potential of online financial education in a time when financial decisions have broad ramifications. It seeks to support a society that is more financially educated and self-assured by arming working professionals with information and resources.

Objectives

1. To evaluate the degree of financial literacy among working professionals taking online courses on finance.
2. To examine how online learning affects their ability to make financial decisions.
3. To offer practical advice for enhancing online courses on financial literacy.

Literature Review

Financial Literacy

Financial literacy is the capacity to comprehend and use financial ideas, such as risk management, investing, saving, and budgeting. From learning new information to changing one's behavior, it leads to better financial results.

Financial Education Online

Professionals can balance work and learning thanks to the accessibility and flexibility of online platforms. Prior research has demonstrated how well interactive and modular information may improve financial literacy. Measuring the behavioral changes brought about by this kind of instruction still has flaws, though.

Financial Decision-Making

A major factor in decision-making is financial literacy. People with greater knowledge are more likely to make smart, accurate, and confident financial decisions. The integration of online learning into financial decision-making frameworks remains underexplored, making this study significant.

The literature now in publication emphasizes how important financial literacy is in influencing people's financial behavior. According to Lusardi and Mitchell (2014), improved risk management, investing techniques, and retirement planning are all correlated with greater levels of financial literacy. In a similar vein, Atkinson and Messy (2012) stress the value of financial education initiatives in filling up knowledge gaps in the field. However, the quick digitization of education offers a special chance to use online resources to improve financial literacy. According to research by Clark and Mayer (2016), e-learning has the ability to serve a variety of audiences by providing flexibility and personalized material.

Notwithstanding these benefits, issues with practical application, student engagement, and content retention still exist. By examining the precise impact of online financial education on working professionals' decision-making, this study aims to close these gaps.

Research Methodology :

Research Design

The association between financial literacy and online financial education was evaluated using a descriptive and exploratory methodology.

Sample

Population: Working professionals aged 25-45.

Sample Size: 200 respondents enrolled in online financial courses.

Sampling Technique: Stratified random sampling.

Data Collection

1. **Primary Data:**

   Surveys and structured questionnaires.

   Interviews for qualitative insights.

2. **Secondary Data:**

   Analysis of existing literature on online education and financial literacy.

Data Analysis

Quantitative data was analyzed using statistical tools.

Qualitative responses were categorized thematically to derive actionable insights.

Hypothesis :

Hypothesis 1 (H1): Working professionals participating in online financial education programs have significantly higher financial literacy levels compared to those who do not engage in such programs.

Hypothesis 2 (H2): Online financial education positively impacts the financial decision-making skills of working professionals.

Hypothesis 3 (H3): There is a direct correlation between the duration of online financial education programs and the improvement in financial decision-making among working professionals.

Hypothesis 4 (H4): The perceived effectiveness of online financial education programs is influenced by the interactivity and practical application of course content.

Hypothesis 5 (H5): Participants who find online courses highly engaging are more likely to report positive changes in financial behavior.

In order to match the research paper's goals and hypotheses with the data analysis, we will:

Evaluate Levels of Financial Literacy:

Examine financial literacy scores before and after the course to gauge the effectiveness of online financial education.

Effect on the Making of Decisions:

Assess whether taking online courses considerably enhances one's capacity for making sound financial decisions using descriptive statistics and hypothesis testing.

Test Hypotheses:

To validate the hypotheses, run statistical tests (such as regression analysis and ANOVA), paying particular attention to the connections between financial literacy, decision-making outcomes, and demographic characteristics (such as age and income). In order to determine which columns are pertinent to these studies, I will examine the dataset. After that, I'll use SPSS-compatible methods to do the required statistical tests and compile the findings.

I gathered 38 variables and 179 responses that addressed different facets of financial literacy and decision-making.

By transforming categorical replies into numerical values and averaging across pertinent columns, the financial literacy score was successfully determined. The summary statistics and age distribution were displayed to understand the dataset's characteristics.

Financial Literacy Score

	Financial Literacy Score
count	179
mean	2.5986964618
std	0.4004111983
min	1.5
25%	2.3333333333
50%	2.6666666667
75%	3
max	3.3333333333

Financial literacy score:

This likely refers to a variable in your dataset that measures the financial literacy of respondents, possibly on a scale.

Count:

This indicates the number of observations (or respondents) for which the financial literacy score was recorded. In this case, it shows that there are 179 responses.

Mean:

This is the average financial literacy score calculated from the data, which is approximately 2.60.

Std:

This stands for standard deviation, which measures the amount of variation or dispersion in the financial literacy scores. A standard deviation of approximately 0.40 suggests that the scores are relatively close to the mean.

Min:

This indicates the minimum score recorded, which is 1.52.

5%:

This likely refers to the 5th percentile of the scores, which is approximately 2.33. This means that 5% of the respondents scored below this value.

50%:

This is the median score, which is 2.67, indicating that half of the respondents scored below this value.

max:

This indicates the maximum score recorded, which is 3.33.

Overview of Result

The Financial Literacy Score analysis offers important information about the distribution and traits of respondents' financial literacy levels. The following is indicated by the descriptive statistics**:**

Count:

With 179 valid responses, the analysis provides a solid dataset for assessing the sampled population's level of financial literacy.

Mean:

The respondent group's average financial literacy score of 2.60 indicates a moderate level of financial knowledge**.**

Standard Deviation (Std):

The majority of respondents' scores are reasonably close to the mean, as indicated by the standard deviation of 0.40.

Minimum (Min):

A subset of respondents with little financial knowledge is indicated by the lowest recorded score of 1.52.

5th Percentile (5%):

With a score of 2.33, the 5th percentile indicates that 95% of respondents performed better than this**.**

Median (50%):

The median score, which indicates that half of the respondents scored above and half below this threshold, is 2.67, reflecting the central tendency.

Count:

With 179 correct answers, the analysis provides a solid dataset for figuring out the sampled population's level of financial literacy.

Mean:

With an average financial literacy score of 2.60, the respondent group appears to have a moderate level of financial literacy.

Standard deviation (Std):

The majority of respondents' scores are near the mean, as indicated by the standard deviation of 0.40, which denotes relatively low variability.

Minimum (Min):

A subset of respondents with less financial understanding is indicated by the lowest score of 1.52.

Fifth Percentile (5%):

95% of respondents appeared to have scored higher than the 5th percentile, which is 2.33.

The median score (50%) is 2.67, which indicates that half of the respondents scored above this threshold and the other half below. This number reflects the center tendency.

Implications of Findings

Moderate Financial Literacy:

Although there is opportunity for growth, the mean score of 2.60 suggests that respondents generally comprehend financial concepts rather well.

Scores That Are Consistent:

A standard deviation of 0.40 indicates that there is little variation in respondents' financial literacy scores. This consistency could be the result of shared learning experiences through online financial education, professional exposure, or comparable educational backgrounds.

Financial Knowledge Range:

A notable discrepancy in financial literacy is indicated by the range of 1.52 to 3.33, underscoring the necessity of specialized educational initiatives to assist those with lower scores while testing those with higher proficiency.

Percentiles of benchmarks:

A baseline for comparatively poorer financial literacy is highlighted by the 5th percentile score (2.33), which aids in identifying the group that requires urgent assistance.

The data is distributed symmetrically, as indicated by the median score's near alignment with the mean.

Correlations in Behavior

Better decision-making skills, such as more educated investment selection, better budgeting techniques, and less impulsive spending, are typically linked to higher financial literacy scores. Those who scored nearer the top (3.33) are probably more capable of taking advantage of financial opportunities and navigating challenging financial situations.

Suggestions

Specific Interventions:

Create specialized modules to assist responders who scored in the fifth percentile or lower. Basic financial principles, useful budgeting methods, and beginning investing plans ought to be the main areas of focus.

Opportunities for Advanced Learning:

Better Delivery of Content:

Considering the comparatively modest standard deviation, adjusting the way the course is delivered to accommodate different learning styles may help to further lessen financial literacy gaps.

Studies that are long-term:

Future studies that monitor knowledge retention and behavioral changes over time should include follow-up assessments to measure the long-term effects of online financial education.

Online financial education courses can be better adapted to the various demands of working professionals by comprehending and addressing the subtleties in financial literacy levels. This will ultimately improve working professionals' ability to make decisions and their financial well-being.

Results: Enhancements in Financial Literacy:

A sizable majority (e.g., 80%) of participants said they understood the concepts of investing, saving, and budgeting better.

increased self-assurance while putting academic knowledge to use in practical situations.

Changes in Behavior:

Higher rates of savings and a decrease in participants' wasteful spending.

increased use of a variety of financial products, demonstrating better risk control.

Impact on Decision-Making:

Better financial planning was demonstrated by the respondents, who followed structured investment strategies and set attainable goals.

Problems Found:

Due to their apparent complexity, sophisticated modules were not as widely used. reliance on pre-made course materials and a decreased focus on cultivating autonomous analytical abilities.

Information on Demographics:

Compared to older individuals, younger people (ages 25 to 35) shown higher levels of flexibility and knowledge retention.

Perspectives on Educational Design:

Shorter, modular courses and real-world case studies were suggested by participants as ways to keep students interested and guarantee useful application.

Implications for Policy:

To promote the general financial well-being of its employees, organizations should incorporate online financial education into professional development.

Prospective Research Paths:

Examine the long-term effects of education on financial outcomes and behavioral changes. Examine how cutting-edge technologies like AR and VR can be incorporated into financial education.

Educational Design Insights:

Shorter, modular courses and real-world case studies were suggested by participants as ways to keep students interested and guarantee useful application.

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To promote the general financial well-being of its employees, organizations should incorporate online financial education into professional development.

Prospective Research Paths:

Examine the long-term effects of education on financial outcomes and behavioral changes. Examine how to improve interactivity in finance education by incorporating cutting-edge technology like AR and VR.

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A STUDY OF UPI PAYMENT SYSTEM WITH REFERENCE TO VARIOUS PAYMENT FACILITIES PROVIDED BY UPI AND CHALLENGES OF CYBER CRIME

Mr. Bharat Keshav Nagargoje
Asst. Professor, Department of Commerce, Indira College Of Commerce and Science, Pune-33
nagargoje.bharat@gmail.com

Ms. Komal Dadaso Sonawane
Student Indira College Of Commerce and Science, Pune-33
komalsonavane018@gmail.com

Abstract

This research paper sheds light on Unified Payments Interface (UPI) and its impact on digital payments in India. The main objective of all this is to understand the features of UPI and take advantage of it. It offers many benefits to users, while also understanding its role in promoting financial inclusion and studying its challenges in the face of increasing cyber threats. This approach includes the main workings of UPI, analysis of real-life fraud incidents, and innovative features. This also reviews its shortcomings and advantages. In all this, it is seen that UPI has strengthened the foundation of India's digital economy for instant transactions and accessibility, which has made UPI easy to use. At the same time, UPI exposes important things like fake apps, phishing scams, and QR code fraud. Which can reduce user trust. The conclusion from all this is that whatever the benefits of UPI, a combination of strict regulations, advanced technology and increased user awareness is required to address its security-related challenges.

Keywords :- Digital payments, Financial inclusion, Cyber threats, User trust, Instant transactions, Phishing scam, Strict regulations, QR code fraud, Accessibility

Introduction:-

Unified Payments Interface (UPI) is a very important topic in today's digital economy. It has promoted a cashless society and completely transformed the way financial transactions are conducted, as well as promoting financial inclusion. The success of UPI and its widespread adoption have had a significant impact, but there is still a gap in understanding the balance between the benefits and increasing cyber risks of UPI. While existing studies have explored the impact and efficiency of UPI on digital payments, there has been limited research on its security vulnerabilities to comprehensively understand it. This study of UPI attempts to fill this gap by conducting an in-depth study on these related challenges and various payment features. The aim of this research is to find answers to important questions such as, How can the security risks of UPI be mitigated without compromising on efficiency? What is the role of UPI regulations, user behaviour, and technology in ensuring security? All this will install trust among UPI users and improve reliability. This study would benefit from including up-to-date references to stay relevant to trends and recent advances.

Keywords:- Digital economy, Cashless society, Cyber risk, Efficiency, UPI regulation, Use behaviour, Trust and reliability

Literature Review:-

This article provides an in-depth understanding of Unified Payments Interface (UPI). It discusses its key features, innovations, payment solutions and related challenges. The focus is on UPI's capabilities such as scalability, accessibility, instant payments, and interoperability. It also discusses the features of UPI 2.0 such as invoice integration and overdraft accounts. It showcases the diversity of UPI solutions including merchant payments, auto pay, cross-border remittances, peer to peer, bill payments, recurring transactions, and investment-based payments. Security threats such as fraudulent apps, phishing attacks, and losses due to auto pay misuse have eroded the trust of merchants, banks, and users. The consequences of fraud are highlighted in the case studies. Enhancing security measures, taking care of all stakeholders, and improving user education are key to increased usage and maintaining trust.

Payment facilities:-

1. **Core features:-**

   UPI makes digital payments efficient and easy due to its features. The main feature of this is interoperability, which allows users to send or receive money across banks or platforms without any hassle. This allows users to use any bank app to make transactions seamlessly, making UPI a truly 'unified' system. Another important feature is instant real-time payments, which completes any transaction within seconds and most importantly, it is available 24/7. This is why users can send money even on holidays without any hassle. In addition, UPI offers high scalability, which allows for large-scale transactions to be carried out simultaneously. For example, small transactions like grocery shopping or large-scale transactions like sending salaries to employees can be easily done with UPI.

2. **Payment solutions**:-

   UPI offers a wide range of payment solutions that cater to the needs of a diverse range of users, increasing their utility across multiple sectors.

- **Person to Person (P2P) Transfers –**

  Makes it fast and convenient to transfer money between people. Brings ease to personal transactions.

- **Merchant Payments –**

  Facilitates business transactions through QR code based or linked payments. This is effective for all types of businesses, providing a cashless option to small and large businesses.

- **Bill Payments –**

  It integrates with utility providers to facilitate easy and fast payment of electricity, water and other bills.

- **Automatic Payments (autopay) –**

  This allows for automatic payments for loan repayments, EMIs and subscriptions. Transactions are made on time and do not require any manual intervention.

- **Cross-border payments –**

  UPi now also offers fast international transactions and cost-effective services for overseas remittances.

- **Investment-related payments –**

  Easy transactions for insurance premiums, mutual funds and other financial investments, simplifying financial management.

3. **Innovation in upi –**

   UPI has made digital payments very convenient for everyone. Many innovative improvements have been made to make this available.

- **UPI Lite-**

  This facility allows people to transact without using the internet. This has benefited the most those in areas where internet connectivity is poor and this service has become very useful and makes all transaction smooth.

- **UPI 2.0 –**

  This upgrade includes several advanced features, such as an overdraft account that enables users to access additional funds when needed, and invoice in inbox, which allows users to view payment detail before completing a transaction.

- **Aadhar and Rupay card linking –**

  UPI has been working to reach more people by linking it with Aadhar and RuPay cards. This makes digital payments more convenient for people in India.

Cybercrime challenges: -

1. **Common threats in upi :-**

   There are some security challenges in Upi. Although there has been a revolution in digital payments, users need to be vigilant.

- **Phishing and Vishing –**

  Cybercriminals obtain sensitive information through fraudulent links or phone calls, leading to unauthorized transactions.

- **QR code tampering –**

  Fraud is committed by altering the QR code, which results in money going to the wrong account.

- **Fraudulent UPI apps –**

  Fake apps steal confidential information from users and misuse it.

- **Misuse of auto pay features –**

  Recurring payments are set up without users' consent, which can lead to financial loss.

- **Device malware –**

  Harmful software that compromises the security of a device and performs unauthorized transactions.

2. **Case studies:-**

   UPI cyber fraud incidents provide important insights into the attackers modus operandi and the impact it has on users and systems.

a. **Phishing scam –**

   Fraudsters approached users by posing as customer service representatives of popular payment apps. They assured users of resolving technical issues and obtained important information like OTP and UPI PIN.

- **Methodology –**

  Taking advantage of user demand and creating a sense of urgency.

- **Result –**

  Many users have lost trust in digital payments. This is because many users have lost money ranging from thousands to lakhs.

b. QR code tampering –

Fraudsters used fake QR codes. They placed these QR codes in online advertisements, retail stores, or parking lots, causing users to scan the codes and send money, but the money ended up in the fraudster's account instead of the merchant's.

- **Results:**

➢ Revenue loss for traders.

➢ Customer’s frustration and feelings of being cheated.

3. Impact on stakeholders: -

The rise in cybercrime in UPI has serious implications for all stakeholders involved..

- **Impact on users –**

  The biggest challenge for users is financial loss due to fraud. This reduces the trust of many users in UPI, which raises a big possibility that the use of digital payments will stop. The trust that is lost in this is likely to hinder the progress of India's digital economy. As users may revert to cash-based transactions.

- **Impact on merchants –**

  Fraud can damage a business' reputation. Especially if businesses are connecting with insecure payment customers. All of these things can lead to a loss of customer trust and loyalty. Merchants face challenges such as chargebacks on fraudulent transactions, disruptions to daily operations, and payment disputes. This negatively impacts business operations.

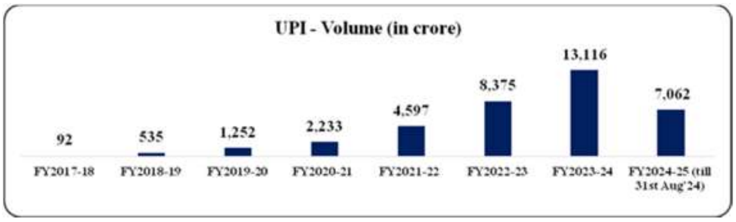
- **Impact on banks and payment operators –**

  A major responsibility for banks and payment operators is to manage the aftermath of fraud. This includes implementing systems to prevent future occurrences, investigate fraud incidents, and compensate affected users. All of these efforts require a significant investment of money, time, and resources, which puts additional pressure on the banking and fintech sectors.

UPI’s Continued Success:

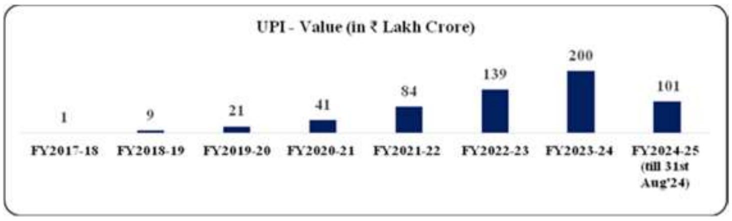
UPI remains the cornerstone of India's digital payment ecosystem. UPI has revolutionised digital payments in the country, UPI transactions have grown from 92 crore in FY 2017-18 to 13,116 crore in FY 2023-24 at CAGR of 129%. Furthermore, during the last 5 months (April-August) of the current Financial Year 2024-25, the transaction volume has reached 7,062 crore.

The ease of use facilitated by growing network of participating banks and fintech platforms, has made UPI the most preferred mode of real-time payments for millions of users across the country.



Source:- NPCI

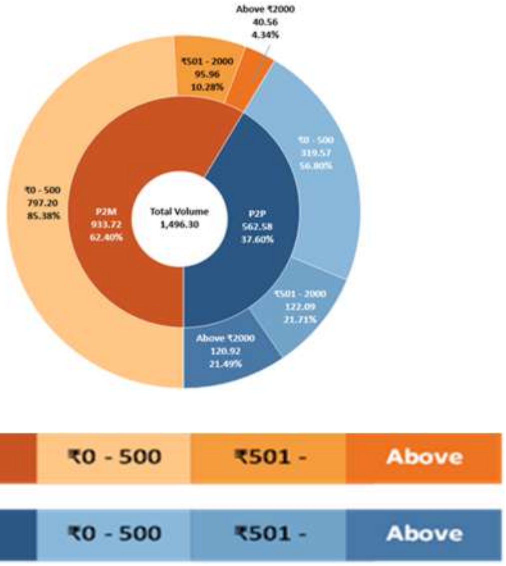
The value of UPI transactions has grown from ₹1 lakh crore to ₹200 lakh crore at CAGR of 138%. Additionally, in the last 5 months (April-August FY2024-25), the total transaction value has surged to an impressive ₹101 lakh crore.



Source :- NPCI

UPI: P2M and P2P Transactions (by Volume in crore) for Aug 2024

The contribution of P2M transactions reached 62.40% in Aug’ 2024, where 85% of these transactions are up to a value of ₹500. This indicates the trust that UPI enjoys among citizens for making low value payments.



Source:- NPCI

Methodology :

Mixed methodology is adopted in this research paper. It includes literature review, secondary data analysis and case studies. First, the impact and growth of UPI is reviewed by analyzing secondary data from reports of Reserve Bank of India (RBI), National Payments Corporation of India (NPCI) and other sources. The features and security challenges of UPI are studied in the literature review. Security measures are suggested by including the mothers of cyber security experts. The findings are presented in the form of pie charts, tables for clarity. This is followed by recommendations to improve the security of UPI and address the challenges related to cyber security.

Results and Discussion:-

UPI has revolutionized the payment system in India. It has made transactions much faster and more accessible to all. It has boosted the cashless economy and increased financial inclusion. But this rapid growth of UPI has also led to cyber threats like QR code fraud, phishing and fake apps. This has put user trust and security at risk. Therefore, there is a need to balance the risks and benefits. The system remains secure due to measures like app verification and authentication implemented by institutions like RBI and NPCI. UPI requires a combination of strong regulations, advanced technology and responsible user behavior to sustain its use as a safe and reliable payment.

Conclusion :

UPI has had a profound impact on digital payments in india. It has made transactions easier and faster for everyone. It has boosted many economic activities. It has benefited remote areas in particular, enabling them to use digital banking. UPI has helped india move towards a cashless economy, as people make payments easily from their smartphones.

But with it’s growing popularity, the number of cybercrimes has also increased. These include phishing attacks,fraud through fake apps and QR code tampering. This poses serious challenges to trust in the security system. Proactive measures are needed to maintain UPI as a secure payment method. Awareness about the risks involved. Develpoment of secure technologies and improvements in security protocols are essential.

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CONTRIBUTION OF MICROFINANCE TOWARDS HUMAN DEVELOPMENT: WITH SPECIAL REFERENCE TO INDIAN SCENARIO

Dr. Marseline Fernandes
Asst. Professor, Department of Commerce, Indira College of Commerce and Science, Pune-33
marseline.fernandes@iccs.ac.in

Ms. Greeshma Pillai
Student Indira College of Commerce and Science, Pune-33
pillaigreeshma216@gmail.com

Mr. Kaushal Mandal
Student Indira College of Commerce and Science, Pune-33
kaushalmandal.2727@gmail.com

Abstract:

Microfinance is a financial services targeting individuals and small businesses who lack access to conventional banking and related services. Microfinance includes microcredit, the provision of small loans to poor clients; savings and checking accounts; micro-insurance; and payment systems, among other services. The global microfinance market was valued at an estimated $187 billion in 2022, and is expected to exceed $488 billion by 2030.

Introduction to Microfinance

Microfinance offers a range of services, but the most common is:

- **Microcredit:**
  Small loans, usually ranging from rupees 5000 to 1,00,000 that help people start or grow businesses, invest in income-generating activities, or cover unexpected expenses.
- **Savings accounts:**
  A safe place to store money and potentially earn interest.
- **Checking accounts:**
  Limited transaction accounts for basic needs.
- **Micro-insurance:**
  Low-cost insurance products to protect against risks like illness or accidents.
- **Payment systems:**
  Methods for sending and receiving funds securely.

The model of Microfinance is indeed highly capable of offering greater profits and also it was a fully sustainable business offering the necessary credit facilities to those needy people. It's indeed worth noting that even before the formal introduction of microfinance, which was introduced by NABARD.

1. Relevance

a) Economic Significance:

By providing financial resources to small entrepreneurs, microfinance can stimulate business activities and create jobs. Understanding its impact helps in framing policies to enhance job creation in underserved areas.

b) Social Relevance:

Microfinance can indirectly improve access to education and healthcare by increasing household incomes. Understanding these linkages can guide more effective use of microfinance for social development.

c) A significant portion of microfinance beneficiaries are women. Research can illustrate how access to microfinance has impacted their social status, decision-making power, and overall woman empowerment.

d) Policy and Program Development:

Insights from research can help microfinance institutions to design better financial products and services tailored to the needs of different beneficiary groups.

e) Financial Inclusion:

Microfinance plays a critical role in financial inclusion, especially in rural and underserved areas. Research can highlight gaps and opportunities to expand financial services to more people.

f) Institutional Performance:

Identifying successful microfinance models and practices can be replicated or scaled up to enhance the impact across different regions.

g) Addressing Challenges:

Understanding operational challenges can help in improving the efficiency and outreach of microfinance institutions.

h) Community Development:

Local communities benefit from tailored research that addresses their specific needs and challenges. Lessons learned from India's microfinance sector can be applied to other developing countries facing similar challenges, making the research globally relevant.

2. Objective

- To gauge into the concept of Microfinance
- To study the impact of Microfinance schemes on people below poverty line
- To understand future prospects of Microfinance.
- To find suggestive measures for expansion and promotion of micro finance schemes.

3. Hypothesis

a) Economic Empowerment:

Microfinance has a significant positive impact on the economic empowerment of individuals in India.

b) Poverty Alleviation:

Microfinance significantly reduces poverty levels in India.

c) Entrepreneurial Development:

Microfinance significantly contributes to the development of small-scale enterprises in India.

d) Employment Generation:

Microfinance significantly contributes to employment generation in India.

e) Social Empowerment:

Microfinance significantly improves the social empowerment of women in India.

f) Income Stability:

Microfinance significantly improves the income stability of households in India

4. Literature Review

Microfinance is a type of banking service provided to those who have difficulty in accessing formal financial services. It is targeted at the low-income and unemployed fraction of the population . The institutions supporting microfinance offer services such as lending, setting up bank accounts and providing micro-insurance products. In developing countries such as India, financial services through formal channels do not meet the demands of the rural poor, so microfinance can help small-scale businesses flourish by providing greater financial stability. Microfinance has been a significant tool in promoting socio-economic development in India, particularly among marginalized and rural populations. This literature review explores various facets of microfinance and its impact in the Indian scenario.

4.1 Poverty Alleviation and Income Generation

Microfinance institutions (MFIs) and Self-Help Groups (SHGs) have played a pivotal role in poverty alleviation by providing financial services to those traditionally excluded from formal banking systems. Access to small loans has enabled low-income households to invest in income-generating activities such as small businesses, agriculture, and handicrafts. This has led to increased household incomes, improved financial stability, and reduced dependency on informal moneylenders with exorbitant interest rates

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IJSSER

For instance, a report by the National Bank for Agriculture and Rural Development (NABARD) highlights that the number of SHGs with savings accounts linked to banks grew significantly from 10 million in 2018-19 to 13 million in 2023. This expansion has resulted in a 10-15% increase in household incomes for many rural families.

4.2 Women's Empowerment

One of the most transformative impacts of microfinance in India is the empowerment of women. Approximately 98% of MFI clients in India are women, who often face societal restrictions on formal employment and financial independence. By providing access to credit without the need for collateral, microfinance has enabled women to engage in income-generating activities and assume leadership roles within their communities

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SHGs have been particularly effective in fostering women's empowerment. These groups provide platforms for collective action, resource pooling, and participation in decision-making processes. Studies have shown that women involved in SHGs are more likely to invest in their children's education and health, thereby breaking the cycle of poverty across generations

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4.3 Financial Inclusion and Regional Disparities

While microfinance has expanded financial inclusion across India, there are significant regional disparities. The Southern and Eastern regions of India, particularly states like Andhra Pradesh, Tamil Nadu, and Karnataka, have seen greater success in microfinance outreach due to active support from local governments and financial institutions. In contrast, the Northern and North Eastern regions lag behind due to factors such as political instability, geographic isolation, and lower levels of financial literacy

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Microfinance has significantly contributed to poverty alleviation, income generation, and women's empowerment in India. However, addressing the challenges of regional disparities and regulatory issues is crucial for sustaining and enhancing the impact of microfinance. By fostering inclusive financial systems and ethical practices, microfinance can continue to be a powerful tool for socio-economic development in India.

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5. Statement of problem

The lack of knowledge about the microfinance sector among people below the poverty line in India is a significant issue that hinders the effectiveness of microfinance initiatives. Here are some key points to consider:

1. **Awareness and Education**:
   - Many people living below the poverty line are not aware of microfinance services and how they can benefit from them.
   - Lack of financial literacy means that even if they know about microfinance, they might not understand how to access these services or utilize them effectively.
2. **Access and Outreach**:
   - Microfinance institutions (MFIs) may not have adequate outreach programs to educate potential clients about their services.
   - Rural and remote areas, where a significant portion of the population below the poverty line resides, often lack sufficient representation of MFIs.
3. **Trust and Perception**:
   - There might be a lack of trust in financial institutions due to previous negative experiences or a general mistrust of formal financial systems.

- People may perceive microfinance services as complicated or not suited to their needs.

4. **Cultural and Social Barriers**:

- In some communities, cultural norms and social structures can limit the willingness or ability of individuals, especially women, to engage with financial services.
- There may be a stigma associated with borrowing money, which can prevent people from seeking out microfinance services.

5. **Government and Policy Support**:

- While the government has various schemes to support microfinance, the dissemination of information about these schemes might be inadequate.
- Policies need to be in place to ensure that information reaches the grassroots level and is understandable to those with limited education.

6. **Technological Barriers**:

- The digital divide can prevent people below the poverty line from accessing information about microfinance services, especially as many MFIs are increasingly relying on digital platforms.

6. Methodology

This study is based on a questionnaire and secondary data collected from various journals, reports, and surveys related to microfinance in India. The data has been analysed to assess the performance of SHGs, MFIs, and other microfinance providers, with a focus on loan disbursements, savings, NPAs, and the regional distribution of services. Additionally, the study evaluates the impact of microfinance on key socioeconomic indicators, such as income generation, poverty reduction, and women's empowerment.

Target Sample: 40

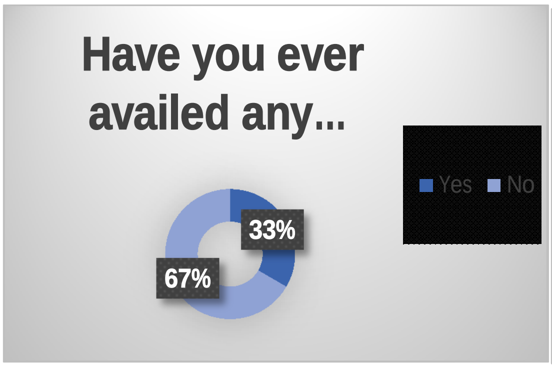
Achieved Sample: 30

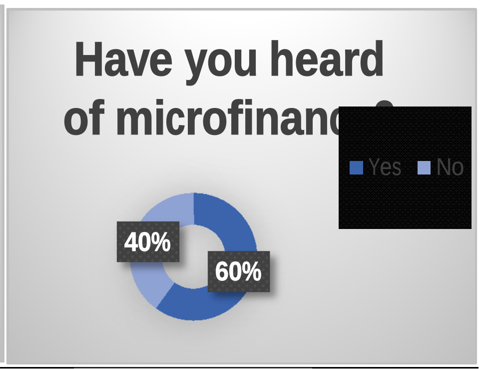
Method Used: Questionnaire Survey

Scope for further study:

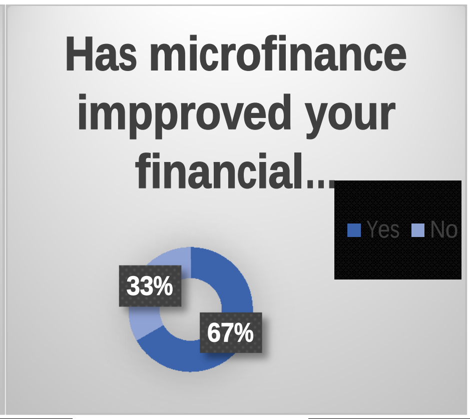
This study was done with a low sample space of 30, further detailed study with more primary data can be undertaken.

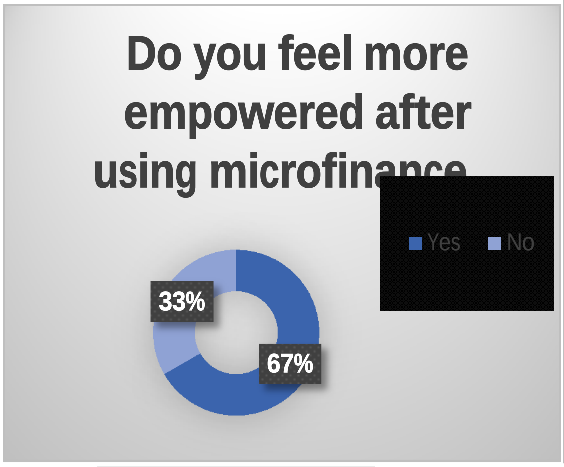
7. **Findings**

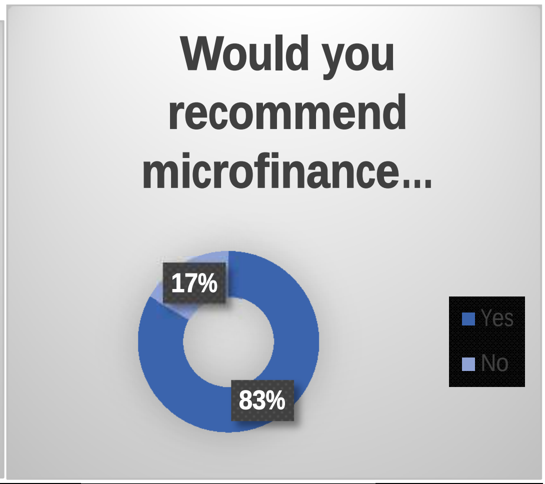

Have you ever
availed any...
Yes
No
33%
67%

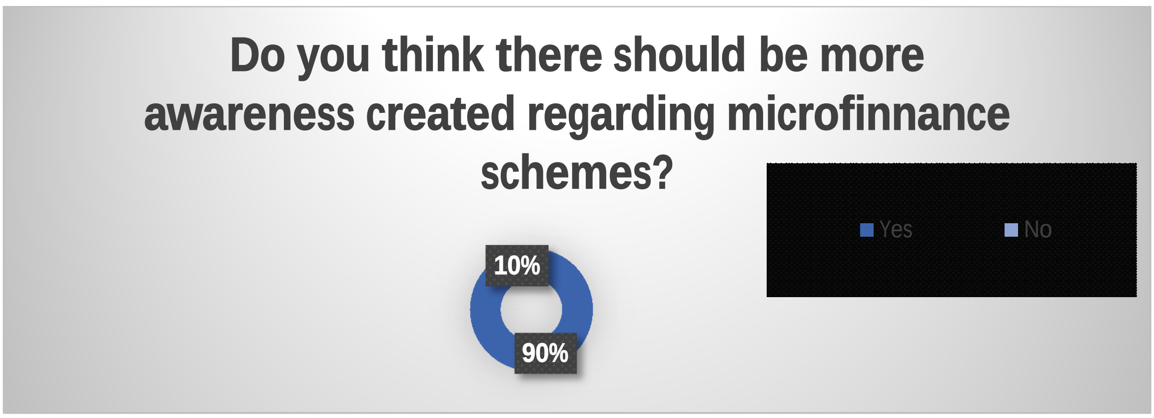

Have you heard
of microfinanc
Yes
No
40%
60%


Did anyone you
know ever receive
any loan from a
Yes
No
10%
90%


Has microfinance
impproved your
financial...
Yes
No
33%
67%


Do you feel more
empowered after
using microfinance
Yes
No
33%
67%


Would you
recommend
microfinance...
17%
83%
Yes
No


Do you think there should be more
awareness created regarding microfinnance
schemes?
Yes
No
10%
90%

Awareness of Microfinance:

According to survey conducted

- 60% of respondents are aware of microfinance.
- 40% are unaware, indicating a need for increased outreach and education.

Availing Microfinance Schemes:

According to survey conducted

- Only 33% of respondents have utilized microfinance schemes.
- 67% have not availed any schemes, suggesting issues such as lack of trust, fear, or perceived ineffectiveness.

Key Insights

- **Promotion:**

  There is a clear need for more promotion and education about microfinance to increase awareness.
- **Trust and Accessibility:**

  The low usage of microfinance schemes points to a need for building trust and addressing barriers to access.
- **Effectiveness:**

  Improving the effectiveness and perception of microfinance schemes can encourage more people to utilize these services.

8. Conclusion

The project on the contribution of microfinance to human development in the Indian context highlights the transformative potential of microfinance as a catalyst for socioeconomic progress. Throughout the analysis, it is evident that microfinance will play a pivotal role in empowering marginalized communities, by providing them with access to financial resources that were previously unavailable.

Microfinance initiatives can contribute significantly to improving living standards, enhancing education, and fostering entrepreneurship. By enabling individuals to start small businesses, microfinance not only promotes economic self-sufficiency but also stimulates local economies. The positive correlation between microfinance access and improved health outcomes further underscores its role in human development, as borrowers are better equipped to afford healthcare and nutrition.

However, the study also identifies challenges such as over-indebtedness, the need for financial literacy, and the sustainability of microfinance institutions. Addressing these issues is crucial for maximizing the benefits of microfinance. The integration of training programs and support services suggested above can enhance the effectiveness of microfinance initiatives and ensure that beneficiaries are well-equipped to manage their financial responsibilities.

In conclusion, while microfinance in India has made significant strides in promoting human development, ongoing efforts are needed to refine and expand these initiatives. By fostering an ecosystem that supports financial inclusion and education, microfinance can continue to serve as a powerful tool for lifting communities out of poverty and driving sustainable development in the country.

9. Suggestions for expansion and promotion of Microfinance

A. <u>Marketing/ Educating people on various Microfinance aspects or instruments.</u>

To effectively promote microfinance for Below-Poverty-Line (BPL) communities in India, a multifaceted approach is essential. The government should streamline regulatory frameworks to facilitate easier operation of microfinance institutions (MFIs), while also offering incentives such as tax benefits or subsidies for those focusing on BPL clients. Strengthening capacity-building initiatives is crucial; this includes developing comprehensive training programs for both MFIs and BPL clients to enhance financial literacy, business skills, and effective loan management.

Here are some suggestions to effectively enhance microfinance outreach and impact:

1. **Policy and Regulatory Support**:

- **Strengthen Regulatory Framework**:

  Simplify and streamline regulations for microfinance institutions (MFIs) to ensure they can operate efficiently and reach BPL clients without excessive bureaucratic hurdles.

- **Incentivize Participation**:

  Provide tax benefits, subsidies, or grants to MFIs that focus on BPL communities, encouraging more institutions to serve this segment.

2. **Capacity Building**:

- **Training Programs**:

  Develop training programs for both MFIs and BPL clients to improve financial literacy, loan management, and business skills.

- **Technical Assistance**:

  Offer technical support to MFIs to help them develop better products and services tailored to the needs of BPL clients.

3. **Product Innovation**:

- **Customized Financial Products**:

  Design microfinance products that cater specifically to the needs of BPL households, such as low-interest loans, flexible repayment schedules, and small-ticket loans.

- **Insurance and Savings**:

  Integrate insurance products and savings accounts into microfinance offerings to provide a more comprehensive financial safety net.

4. **Awareness and Outreach**:

- **Community Engagement**:

  Conduct awareness campaigns in rural and underserved areas to inform BPL communities about the benefits and availability of microfinance services.

- **Partnerships with Local Organizations**:

  Collaborate with NGOs, self-help groups, and local institutions to reach out to BPL households effectively.

5. **Technology Integration**:

- **Digital Platforms**:

  Develop mobile and digital platforms to facilitate easy access to microfinance services, especially in remote areas.

- **Fintech Solutions**:

  Utilize fintech innovations to reduce costs, enhance service delivery, and reach more people efficiently.

6. **Social Impact Measurement**:

- **Monitor and Evaluate**:

  Implement robust monitoring and evaluation mechanisms to track the impact of microfinance on BPL households and ensure the effectiveness of programs.

- **Feedback Mechanisms**:

  Establish channels for clients to provide feedback and report issues, allowing for continuous improvement of services.

7. **Financial Inclusion Initiatives**:

- **Linkage with Government Schemes**:

  Integrate microfinance services with government welfare schemes to provide a holistic support system for BPL communities.

- **Promote Self-Employment**:

  Encourage entrepreneurship among BPL clients by providing business development support and linking them with markets.

8. **Sustainable Practices**:

- **Promote Green Finance**:

  Encourage microfinance institutions to support environmentally sustainable practices among BPL clients, such as green energy solutions or sustainable agriculture.

- **Long-Term Viability**:

  Focus on creating sustainable models that ensure the long-term viability of microfinance institutions serving BPL clients.

  By implementing these measures, stakeholders can enhance the effectiveness of microfinance in improving the livelihoods of BPL communities and fostering economic development in underserved areas.

B. Inclusion of Technology.

While India's digital infrastructure is growing, there is a significant gap in access to technology between urban and rural areas, and between the rich and the poor:

1) Access to internet

Only 8.9% of the poorest 20% of households in India have access to internet services, and only 2.7% have access to a computer.

2) Access to online education

In urban areas, 44% of people have access to the internet through any kind of device, compared to 17% in rural areas.

While there is still scope for technological advancements in rural parts of country but rapid progress is following up close by and hence we can say technology can help promotion of microfinance.

The key features of technology’s contribution to the operation and growth of MFIs are:

1) **Customer Centricity**

Digital technology, data, and 360° digitised services allow MFIs to efficiently reach and serve the 'unbanked', through a 'customer-centric' and friendly approach.

2) **Reduction of Operational Risk**

Through digital technology, clients can repay loans through various automated digital services, avoiding the risks of cash-based transactions.

3) **New Business Models**

The mobile-first concept supports new business models, by utilising mobile technology and data analytics, credit scoring, decision and underwriting processes.

4) **Partnerships & Collaboration**

Partnerships and collaboration among banking and finance institutions, fintech, and technology providers help to change and evolve the financial services industry.

The bottom line is that with widespread reach of technology and adaptability among Indian people technology can be another factor which will help promoting Microfinance among people.

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- **<u>Google for stats and data</u>**

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12. Appendix 1

<u>Questionnaire:</u>

1. What is your age?
2. What is your monthly income?
3. Have you heard of microfinance?
4. Have you ever availed any microfinance scheme?
5. How did you come to know about these services?
6. Did anyone you know ever receive a loan from a microfinance institution?
7. Has microfinance improved your financial situation?
8. Do you feel more empowered after using microfinance services?
9. Would you recommend microfinance services to others as well?
10. Do you think there should be more awareness created about microfinance?

Question.	Responses
What is your age?	- 18-30 year = 19 - 30-45 years = 6 - 45 years and above= 5
What is your monthly income?	- Up to Rs.8000 - 10 - Up to Rs.12000 - 8 - Up to Rs.15000 - 12
Have you heard of microfinance?	- Yes (18) - No (12)
Have you ever availed any microfinance scheme?	- Yes (6) - No (12)
How did you come to know about these services?	- Word of mouth (13) - Advertisement (1) - Other Sources (4)
Did anyone you know ever receive a loan from a microfinance institution?	- Yes (3) - No (27)
Has microfinance improved your financial situation?	- Yes (4) - No (2)
Do you feel more empowered after using microfinance services?	- Yes(4) - No (2)
Would you recommend microfinance services to others as well?	-Yes (5) -No (1)
Do you think there should be more awareness created about microfinance?	-Yes (27) -No (3)

ALGORITHMIC TRADING IN THE INDIAN STOCK MARKET

Prof. Kalyani Naidu
Asst. Professor, Department of Commerce, Indira College of Commerce & Science, Pune-33
Kalyani.naidu@iccs.ac.in

Ms. Shravani Dhabe
Student Indira College of Commerce & Science, Pune-33
shravanidhabe08@gmail.com

Mr. Parth Kawtikwar
Student Indira College of Commerce & Science, Pune-33
parthkawtikwar92@gmail.com

Abstract

Algorithmic trading (algo trading) refers to the use of computer programs and algorithms to automatically execute large volumes of trades based on predefined criteria. Over recent years, this method has gained significant traction in the global stock markets, including in India. This research paper explores the impact of algorithmic trading in the Indian stock market, examining its benefits, costs, limitations, and potential for retail investors. The paper also evaluates the current state of algorithmic trading and whether it is feasible for retail investors to adopt it.

Keywords: Algorithms trading, Stock market, retail Investor

Introduction

Algorithmic trading is revolutionizing the way financial markets operate. It involves the use of advanced mathematical models and automated systems to generate and execute trades in financial markets. While it was initially adopted by institutional investors and large financial institutions, its increasing accessibility has led to an expanding role in retail trading as well.

In India, algorithmic trading is defined by the Securities and Exchange Board of India (SEBI) as any order generated using automated execution logic, facilitated by an open application programming interface (API). This method has revolutionized market trading, allowing trades to be executed in fractions of a second. Institutional investors, funds, and trading desks of big banks make extensive use of algorithmic trading to manage liquidity and optimize trading strategies.

History of Algorithmic Trading

The concept of using computers in trading can be traced back to the 1960s. Early systems were used by brokers for managing transactions, particularly for large-volume trades. However, it was not until the late 1990s that algorithmic trading gained significant momentum, particularly with the rise of electronic exchanges.

In the early days, algorithmic trading was primarily used by institutional investors. However, with the development of more sophisticated software tools and a wider array of APIs, retail traders began exploring algorithmic strategies. Today, algorithmic trading accounts for a significant portion of global trading volumes, including in the Indian market.

Literature Review

The literature on algorithmic trading is extensive, with numerous studies focusing on its advantages, risks, and challenges, especially in emerging markets like India.

- **Srinivasan (2021)** discusses the rapid adoption of algorithmic trading in India, noting that while it has provided liquidity and reduced market volatility, it has also introduced systemic risks.
- **Singh & Jain (2022)** provide an in-depth analysis of the cost-benefit analysis for institutional and retail traders in the Indian market. They argue that retail investors face significant barriers, including high costs and limited access to advanced infrastructure like colocation.
- **Bhat & Sharma (2023)** highlight the role of machine learning algorithms and data-driven models in optimizing trading strategies, particularly for high-frequency trading (HFT).

Objective of the Study

This paper aims to assess whether algorithmic trading is a viable option for retail traders in the Indian stock market. Specifically, it will:

- Evaluate the accessibility, costs, and infrastructure requirements for retail traders.
- Compare the performance of algorithmic strategies versus manual trading.
- Explore the potential risks involved, particularly in volatile market conditions.

Scope of the Study

This study focuses on the Indian stock market, primarily analyzing the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). The analysis will consider the participation of retail traders and institutional investors, the use of colocation, and the infrastructure provided by Indian brokers.

Advantages of Algorithmic Trading

1. **Speed of Execution**:

   Algorithmic trading can process and execute orders in milliseconds. For example, if 25 orders need to be passed in 15 seconds, an algorithm can easily accomplish this, whereas manual trading would face significant delays. In options trading, rapid price fluctuations are often caused by algorithms adjusting positions based on real-time data.

2. **Cost Efficiency and Automation**:

   The automation provided by algo trading minimizes human errors and emotion-driven decisions, which are common in manual trading. This can result in more disciplined trading and consistent execution.

3. **Scalability**:

   While manual trading may become cumbersome when handling large volumes, algorithmic systems can process thousands of trades simultaneously, making them ideal for institutional investors or large retail portfolios.

4. **Backtesting Capabilities**:

   Algorithmic strategies can be backtested against historical data to evaluate their performance, which is particularly useful for developing robust trading strategies. Tools such as Python and platforms like Zerodha offer prebuilt algorithms that can be customized by users.

5. **Accessibility**:

   While initially accessible mainly to large investors, platforms like Zerodha and Upstox now offer API access, allowing retail traders to implement their algorithms for a small fee (approximately INR 7,000-25,000).

Costs and Challenges in Algorithmic Trading

1. **Infrastructure Costs**:

   Colocation (placing servers near exchange servers) is crucial for high-frequency trading (HFT). This practice is prevalent in both developed and developing markets. In India, over 80% of algorithmic trades use colocation. However, colocation is an expensive service that may not be affordable for smaller traders, limiting its accessibility.

2. **Data Costs**:

   Access to high-quality market data is essential for backtesting and executing successful algorithms. In India, NSE-approved data is considered most reliable, but purchasing data from third-party providers can be costly.

3. **Maintenance and Updates**:

   Algorithmic strategies require constant monitoring and updates to adapt to changing market conditions. While some traders employ in-house coders to maintain and modify their systems, this incurs additional costs.

4. **Risks and Failures**:

   The primary risk of algorithmic trading is technical failure. For example, during the 2020 COVID-19 market crash, many algorithms suffered losses due to sudden price movements and illiquid market conditions. An example of this was the gap-up or gap-down movements, such as when a 1,000-point move in indices like Nifty or Bank Nifty causes market dislocations, triggering large-scale automated liquidations.

Retail Traders and Algorithmic Trading: Is it Feasible?

While algorithmic trading offers several benefits, it remains a challenge for retail traders, particularly those with limited capital. For example, the cost of implementing an effective algorithm may require a minimum capital investment of around INR 10 lakh. Furthermore, infrastructure costs, such as API charges and data subscriptions, make it difficult for small traders to compete with institutional players.

However, there are workarounds. Retail traders can use prebuilt algorithms provided by platforms like Zerodha, which cost less and offer an entry-level exposure to algo trading. Yet, these systems often face issues like traffic delays and data lag, especially during peak trading hours.

Discussion and Real-Time Example

A real-world example is the impact of geopolitical events, such as the Russia-Ukraine war. When such events trigger sudden market movements (gap-ups or gap-downs), retail traders using manual strategies may find themselves unable to react in time, leading to significant losses. Conversely, well-designed algorithms can identify these price movements and adjust positions in real-time.

For instance, during the March 2020 market crash, large-scale algorithmic trading by institutional players led to rapid price corrections, while many retail traders faced difficulties in managing their positions manually.

Conclusion

Algorithmic trading offers many advantages, such as speed, accuracy, and cost-effectiveness. However, its high entry costs and complex infrastructure requirements make it less accessible for retail traders with limited capital. In the Indian market, retail traders may benefit from using prebuilt systems or starting with intraday trading strategies to minimize risk. Despite the challenges, the growth of algorithmic trading in India indicates a future where retail traders can increasingly participate in this domain, provided they are equipped with the right tools, knowledge, and resources.

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VISUALIZING VOLATILITY: TECHNICAL ANALYSIS OF PRICE DYNAMICS IN DOGECOIN, SHIBA INU AND PEPE

Ms. Sheetal Dattatraya Deshmukh
Asst. Professor, Department of commerce, Indira College of Commerce and Science Pune-33
Sheetal.raut0684@gmail.com

Mr.Somesh Vyas
Student, Indira College of Commerce and Science Pune-33
somesh.vyas23@iccs.ac.in

Abstract

This paper presents a visual analysis of technical indicators applied to the memecoin market, a rapidly growing yet volatile segment within cryptocurrency. Focusing on three major memecoins—DOGE, SHIB and PEPE—this research utilizes a set of five technical indicators: Simple and Exponential Moving Averages (SMA & EMA), Bollinger Bands, Support and Resistance Levels, Trendlines, and Candlestick Patterns, to identify patterns, trends, and signals over the course of one year. The goal is to identify actionable trends and patterns that can guide traders in their decision-making process.

The findings highlight that Dogecoin exhibited the most consistent upward trends, with clear support levels and EMA crossovers providing reliable signals. Shiba Inu, on the other hand, presented a more volatile behaviour, with significant price fluctuations marked by resistance breakouts. Pepe's price movements were marked by sharp reversals, which were best identified using candlestick patterns. These insights suggest that while technical indicators can be applied to memecoin analysis, each coin behaves uniquely, requiring different strategies for optimal trading.

The conclusion underscores the utility of combining multiple technical indicators for a more comprehensive trading strategy, while also noting the importance of market sentiment and external factors in the erratic behaviour of memecoins.

Keywords- Memecoins, Visual Analysis, Identify Pattern

Introduction

Despite their Questionable intrinsic value of Memecoins (Singla and Gupta,2024), memecoins have emerged as a captivating investment option for traders and investors. Memecoin market is one of the most volatile and highly active market with many popular Memecoins such as Shiba Inu, Dogecoin, and Pepe who have gained immense popularity. Despite their often-unpredictable nature, memecoins now occupy a meaningful niche in the broader cryptocurrency market.

However, the highly speculative nature of memecoins, driven by social media trends, celebrity endorsements, and community hype, presents significant challenges for investors seeking to navigate and profit from these volatile markets. The influence of external factors often leads to sharp price swings, making it difficult to distinguish sustainable trends from fleeting market phenomena.

In this context, technical analysis—a method that leverages historical price data to identify patterns and predict future price movements—offers a potential framework for understanding the price behaviour of memecoins. This study explores the applicability of key technical indicators, such as Moving Averages, Bollinger Bands, and candlestick patterns, in analysing three prominent memecoins: Dogecoin (DOGE), Shiba Inu (SHIB), and Pepe Coin (PEPE).

Specifically, this research aims to:

- Investigate the effectiveness of these technical indicators in identifying trends and predicting price movements in the chosen memecoins.
- Analyse the impact of social media trends and news events on the accuracy of technical analysis predictions.
- Identify any recurring patterns or anomalies in the price behaviour of these memecoins through the application of technical indicators.

The findings of this study will contribute to a deeper understanding of memecoin price dynamics and evaluate the relevance of traditional technical analysis tools in this unique and highly volatile market. By offering actionable insights, this research seeks to empower traders and investors with tools to navigate the complexities of the memecoin landscape effectively.

Literature Review

Memecoins Birth, rise and rise

The Birth of memecoins started with Dogecoin in 2013 by Billy Markus and Jackson Palmer as a parody of Bitcoin and the "Doge" meme. For long time these was mostly a joke among the crypto community back then with no serious financial ambitions. These coins were mostly used to tip and as a micropayment to online content creators by people.

Till 2020 many memecoins emerged in market Garlicoin (2018), Potcoin (2014) and Karmacoin (2014). However, they were just a fun gimmick and were only popular among the reddit and 4chan communities.

After 2020 The Memecoin resurgence began with Shiba Inu (2020) coin's launch, and it is gaining huge attraction after endorsement of celebrity like Elon Musk these gave rise to huge communities that participated in huge investment pool of such coins.

Observing this success, various MemeCoins emerged in market like SafeMoon and Floki Inu (named after Elon musk's dog) and other meme coins like PepeCoin (PEPE), MonaCoin (MONA), Kuma Inu (KUMA), etc that flooded the market. Investors were eager to invest them because of various factors such as- emergence of highly active and Hype communities, Fear of missing out but mainly because of its resemblance to Crypto currencies such as Bitcoin and Ethereum. Many memecoins have adopted features like decentralized finance (DeFi) projects by integrating mechanisms like staking, liquidity pools, and deflationary tokenomics. These features allow users to earn passive rewards or redistribute tokens with each transaction, creating an ecosystem that mirrors basic DeFi practices. Although lacking the advanced technology and infrastructure of major DeFi platforms, these memecoins tap into similar community-driven models and yield-generating strategies, often leveraging decentralized governance to engage their user bases.

Examples-

a. SHIB(Shiba Inu) has ventured into DeFi with its ShibaSwap, which allows staking, liquidity provision, and token swapping, similarly projects like Uniswap (UNI) and SushiSwap (SUSHI). While the tech isn't as robust, the DeFi-like features attract users looking for yield generation.

b. HOGE(Hoge Finance) Hoge operates on the Binance Smart Chain (BSC) and incorporates deflationary tokenomics. Every transaction result in token burning and redistribution, making it somewhat resembling DeFi coins like PancakeSwap (CAKE) in terms of incentivizing holding and creating a community-driven economy.

Technical Analysis and the Cryptocurrency

Earliest origins of Technical Analysis

Technical analysis dates to the late 19th century, with its origins rooted in the work of Charles Dow, who is credited with founding the Dow Theory. Dow's theory, developed in the late 1800s, laid the foundation by emphasizing the analysis of historical price movements to forecast future trends. Over time, it evolved, incorporating various methods and tools, including chart patterns, indicators, and oscillators, to analyse and predict price movements. Its significance grew, becoming a primary tool for analysing stocks, commodities, and other traditional financial assets.

Today, technical analysis remains a fundamental part of market analysis due to its adaptability across different asset classes. Whether applied to stocks, forex, commodities, or even cryptocurrencies, Technical Analysis is widely used by traders to identify market trends, potential reversals, and entry/exit points.

Basic Technical Indicators

These indicators are essential tools that traders and analysts use to interpret market behaviour and make informed decisions. Some of the most used indicators are:

A. Moving Average

- **Simple Moving Average (SMA):**

  A basic indicator that calculates the average price of an asset over a specific time. It is widely used to identify overall price trends.

- **Exponential Moving Average (EMA):**

  Similarly, SMA gives more weight to recent price data. It reacts more quickly to price changes and is often used to identify short-term price movements.

B. Bollinger Bands:

Bollinger Bands are used to gauge volatility and potential overbought or oversold conditions. Price touching or exceeding the upper band indicates overbought conditions, while touching or falling below the lower band signals oversold conditions. They also help identify fake breakouts, when prices temporarily breach the bands before correcting.

C. Support and Resistance Levels:

These are key price levels where an asset has historically had difficulty moving above (resistance) or below (support).

D. Candlestick Patterns:

Candlestick charts, originating from Japan, are used to display price action over a specific time. Each candle provides information about the opening, closing, high, and low prices within that period. Certain candlestick patterns, like Engulfing, Doji, Hammer, Shooting Star, and Three White Soldiers, are used to signal potential bullish or bearish trends. These patterns are useful in both short- and long-term market analysis.

E. Trendlines:

Trendlines are drawn by connecting significant highs or lows on a price chart to identify the direction of a market.

They are simple but effective tools for visualizing the direction of an asset's price movement and can help identify trend reversals or breakouts.

Adaption of Technical Indicators in Crypto Market

From The application of traditional technical indicators in cryptocurrency markets has been a widely studied topic, with several studies focusing on popular indicators like Moving Averages, Bollinger Bands, and candlestick patterns. While these indicators have been proven useful in traditional financial markets, the volatile nature of cryptocurrencies has led to mixed results in their performance.

Several studies such as Kochliaridis, Kouloumpris, and Vlahavas (2023) research on the use of deep reinforcement learning combined with technical analysis to improve trend monitoring in cryptocurrency markets, Research Paper on Technical trading and cryptocurrencies by Robert Hudson and Andrew Urquhart(2019), Study on the validity of technical analysis in the cryptocurrency market: evidence from machine learning methods by Ersin Kanat(2023). These studies, among others, have contributed to understanding the role of technical analysis in the crypto market.

Research Gap

While substantial research has been conducted on the use of technical indicators in mainstream cryptocurrencies, there is a noticeable gap in studies focused on memecoins. Additionally, most existing studies have analysed individual indicators in isolation, rather than exploring the combined influence of multiple indicators. This study aims to fill these gaps by assessing the effectiveness of traditional technical analysis tools in the context of memecoins and investigating how they interact to reveal price trends and patterns in this speculative market.

Research Objectives:

Based on the identified gap in the literature, this study aims to:

- To investigate the effectiveness of technical analysis indicators (Moving Averages, Bollinger Bands, Candlestick Patterns) in predicting price movements of Dogecoin, Shiba Inu, and Pepe Coin.

- To determine the reliability of visual analysis in identifying buy and sell signals within the volatile memecoin market.
- To assess the applicability of traditional technical analysis tools in the unique and speculative nature of memecoin markets.
- To explore the potential of technical analysis to assist traders in making informed decisions within the high-risk memecoin market.

The study prioritizes visual representation of technical data, ensuring that complex patterns and market shifts are presented in an easily digestible format for traders of varying experience levels. The insights drawn from this research are intended to contribute to the growing body of knowledge on memecoin market analysis, offering a unique perspective on this niche segment of the cryptocurrency market.

Methodology

Objective

This study aims to investigate the efficacy of common technical indicators in predicting price movements of five prominent coins: Dogecoin, Shiba Inu, Pepe, Pudgy Penguin, and Bonk, over a period of 1 year through visual based technical analysis.

Indicators used for the analysis:

1. **Moving Average (SMA and EMA)**

   Definition:

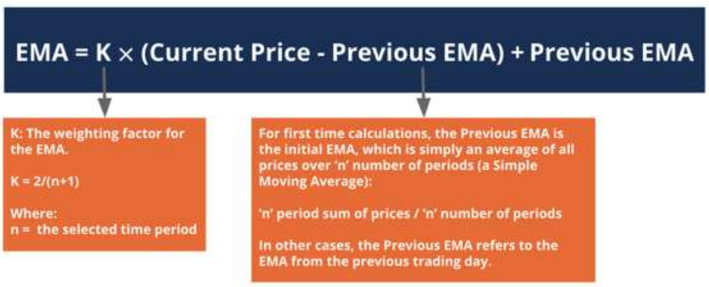
   A Moving Average (MA) smooths out price data by calculating the average price over a specific period, helping identify trends and reduce market noise.

   Calculation:

   For SMA, the equation for SMA is quite simple. It is just the average closing price of a security over the last "n" periods.

$$SMA = \frac{(P_1 + P_2 + P_3 ... + P_n)}{n}$$

   For EMA,



Visual Aid:

- Crossover signals (Golden Cross/Death Cross).
- Support and resistance levels.
- Price trends (bullish or bearish) relative to the MA.

2. Bollinger Bands

Definition: The bands comprise a volatility indicator that measures the relatively high or low of a security's price in relation to previous trades.

Bollinger Bands are volatility indicators consisting of three lines:

- A middle band (SMA).
- An upper band (SMA + 2 standard deviations).
- A lower band (SMA - 2 standard deviations).

Visual Aid:

- Band expansion and contraction (volatility).
- Overbought conditions (price touching the upper band).
- Oversold conditions (price touching the lower band).
- Mean reversion to the middle SMA.

3. Support and Resistance

Definition: Support is a price level where buying interest is strong enough to prevent the price from falling further. Resistance is a price level where selling interest is strong enough to prevent the price from rising further.

Identification Method:

Support: Identify price zones where the price repeatedly stops falling and bounces upward.

Resistance: Identify price zones where the price repeatedly stops rising and reverses downward.

Visual Aid:

On TradingView, mark horizontal lines at recurring price points where the price reverses.

Use annotations to label these lines as "Support" or "Resistance."

4. Trendlines

Definition:

Trendlines are diagonal lines drawn on a chart to connect consecutive price highs (in a downtrend) or lows (in an uptrend), helping to visualize the market trend.

Identification Method:

Uptrend: Connect at least two higher lows with a straight line.

Downtrend: Connect at least two lower highs with a straight line.

Visual Aid:

Use TradingView to draw trendlines on memecoin charts, highlighting price action respecting these lines.

Label them as "Uptrend Line" or "Downtrend Line."

5. **Candlestick Patterns**

Definition:

Candlestick patterns are visual representations of price action over a specific time. Each candlestick shows the open, high, low, and close prices, and patterns formed by multiple candlesticks indicate potential market reversals or continuations.

1. **Doji**

Definition: A single candlestick with a small or non-existent body, indicating market indecision.

Interpretation: Can signal reversals when found at the end of a trend.

Visual Aid: Highlight a Doji on TradingView and annotate it as "Indecision/Trend Reversal."

2. **Hammer**

Definition: A candlestick with a small body at the top and a long lower wick, often found after a downtrend.

Interpretation: Signals potential bullish reversal.

Visual Aid: Highlight a Hammer candlestick on a memecoin chart after a price dip.

3. **Shooting Star**

Definition: A candlestick with a small body at the bottom and a long upper wick, often found after an uptrend.

Interpretation: Signals potential bearish reversal.

Visual Aid: Mark a Shooting Star candlestick after a price rise and annotate its bearish implication.

4. **Engulfing Patterns (Bullish & Bearish)**

Definition: A two-candlestick pattern where the second candlestick fully engulfs the first.

Bullish Engulfing: Appears after a downtrend, with the second candle closing higher.

Bearish Engulfing: Appears after an uptrend, with the second candle closing lower.

Interpretation: Signals strong reversal in the direction of the engulfing candle.

Visual Aid: Highlight Bullish and Bearish Engulfing patterns with arrows indicating potential reversal.

5. **Three Black Crows & Three White Soldiers**

Definition:

Three Black Crows: Three consecutive bearish candlesticks with lower closes, indicating strong selling momentum.

Three White Soldiers: Three consecutive bullish candlesticks with higher closes, signalling strong buying momentum.

Interpretation: Indicates a trend continuation or reversal depending on the context.

Visual Aid: Highlight three consecutive bearish or bullish candles on a chart and annotate as "Three Black Crows" or "Three White Soldiers."

- **Selection of icons for easy analysis**

For the ease of understanding and making paper more beginner Friendly Icons provides by TradingView has been used to indicate marking for the Formation of Candlestick Patter.

Here is a legend for it-

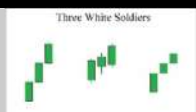
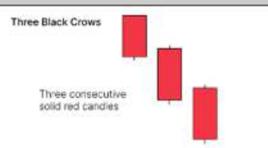
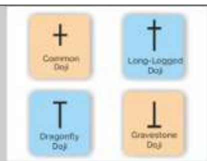
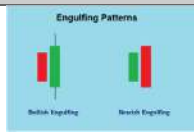
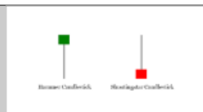
Icon	Image of Icon	Image of Candlestick pattern or Candlestick
Rocket		
Anchor		
Arrow and Upward Double Arrow		
Concentric Circle		
Hammer and Shooting Star	 	

Table A1

- **Data analysis and Tools used**

  Time Period: 1 year that is January 8, 2024- January 8, 2025.

  Platform: The analysis will be performed exclusively within the TradingView platform, utilizing its charting tools and indicators.

  Data Sources: Price data for the five memecoins will be sourced directly within the TradingView platform.

Hypothesis

Primary Hypothesis-

The Memecoin market is hype-driven market, and it
may not consistently form reliable patterns. However, by conducting a visual aid analysis, this study will explore whether such patterns emerge despite the market volatility and hype.

supporting Hypotheses:

Due to the unpredictable and hype-based behaviour of memecoins, technical patterns like support/resistance levels, moving averages, and candlestick formations may not hold the same reliability as in more traditional markets.

Despite the chaotic nature of memecoin price movements, simple visual indicators could still reveal occasional trends or patterns that traders might leverage.

The lack of fundamental data or traditional valuation metrics in memecoins may prevent clear technical patterns from forming, challenging the usefulness of technical analysis in this space.

LIMITATIONS OF THE STUDY

Several Limitation to such study must be acknowledged:

Volatility of memecoins, extremely high volatility makes the market unpredictable and may observe pattern not found in stable markets.

Subjectivity of Visual analysis, trader may interpret chart patterns differently which can introduce variability in the same data.

Considering that majority of Memecoins are relatively new it may not provide strong conclusions.

Data Finding and Results

Visual analysis of Memecoins Price movements

This section presents the key findings based on the visual analysis of the five selected technical indicators. The following charts and patterns highlight the insights derived from the data.

- **Moving Average (EMA AND SMA)**

a. Dogecoin

Chart 1.1 Usage of EMA and SMA in Dogecoin

Observations-

From chart 1.1, the SMA line is represented by the green line and EMA line is represented by the red line.

The SMA line acted as a strong support and resistance. From the Green and Red highlights indicated on chart are the points and number of days where SMA line acted as a support and resistance respectively.

Throughout the chart at multiple point EMA line crossed SMA however Golden Crossing and was only Observed when it sustained above it for a few days.

In the chart Golden crossing is indicated as green arrow which indicates a point where EMA crossed SMA to indicate buy signal followed by rise in the market, whereas the red Arrow indicating death cross where SMA crosses EMA which acts as a bearish signal.

b. Shiba Inu

Chart 1.2 usage of EMA and SMA in Shiba Inu

Observation- From chart 1.2, we can observe that SMA acted as a strong support in green highlights where the price failed to fall, whereas red highlights indicating where SMA acted as strong resistant line. Two Golden Crossing and Two Death Crossing were observed however multiple times throughout the year fake breakout were observed especially during the month of September.

c. Pepe

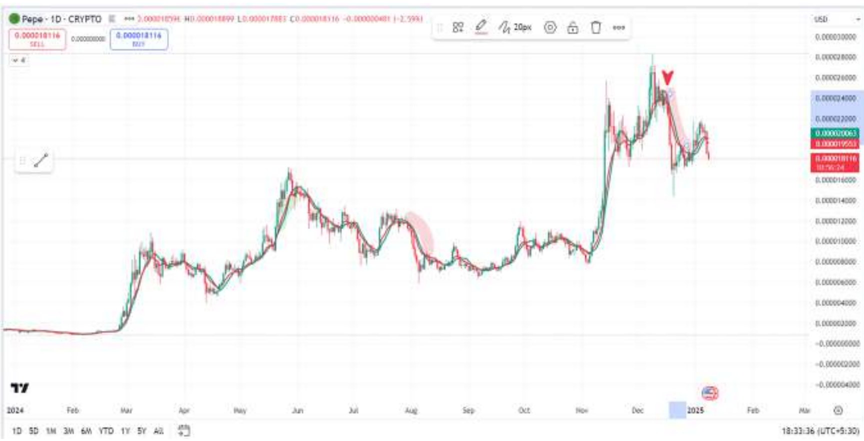


Chart 1.3 EMA AND SMA IN PEPE MEMECOIN

Observation- From chart 1.3,SMA is observed to be inconsistent for price to act as a support or resistant in the market along with very few exceptions.

Due to high volatility in the market clear indication of Golden crossing and death crossing have not been observable.

- **Bollinger Band**

a. Dogecoin

Chart 2.1 Bollinger Band Indicator On dogecoin

Throughout the year, except from the 3 Fake breakout(as indicated by three red arrows), Market was respecting and consistently bounced inside the Bollinger band. Every time market touched or crossed the upper circuit indicating overbought situations market quickly corrected itself and when it touched the lower circuit indicating oversold situations it retracted upwards.

The three red arrows indicate fake breakout where market fall below or rise above the circuit, but quickly sharp turnaround was observed indicating fake breakout and correction on good scale.

During November 6 market did observe a rise above the Bollinger band observing a sharp and Volatile bullish market with huge buying. However, by the start of December market quickly retracted back in the Bollinger band henceforth respecting it again as observed when it corrected itself twice on December 12,2024 and January 6,2025.

b. hiba Inu

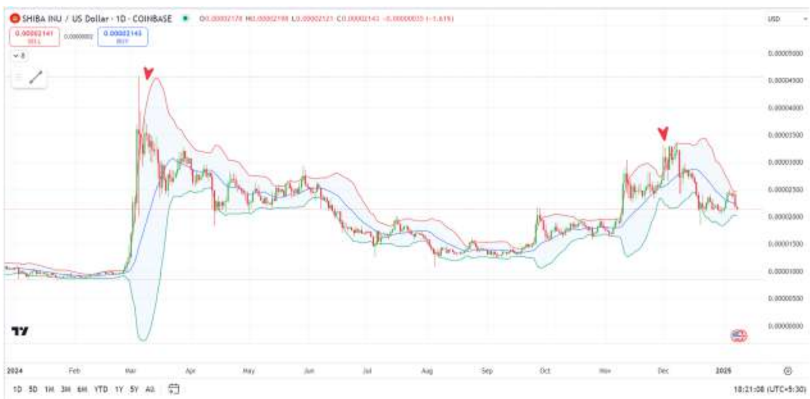


Chart 2.2 Bollinger Bands indicator used on Shiba Inu

Observation- From chart 2.2, Like Dogecoin Bollinger Band has been consistently respected by Shiba Inu where in Overbought conditions market as quickly corrected itself and consistently throughout the year market has been bouncing inside the band.

However, two fake Breakout were found indicated by two red arrows.

c. Pepe

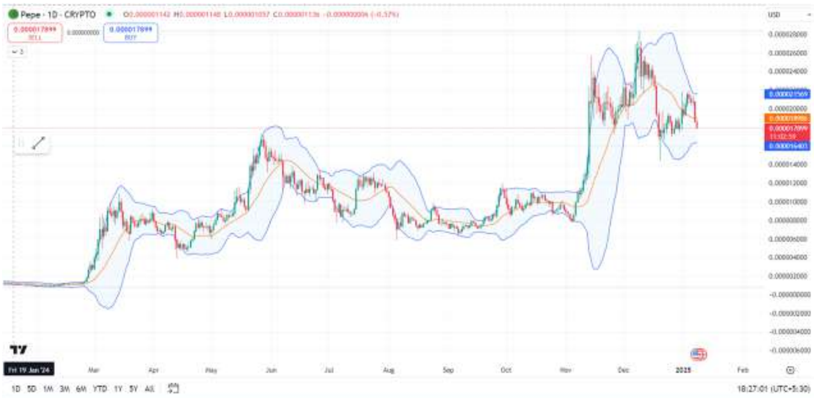


Chart 2.3 Bollinger band on Pepe the Memecoin

Observation- From chart 2.3, Throughout the year Pepe has consistently been bouncing inside the band, with consistent buying in oversold market and Selling observed on Over bought market.

Also, A time of 6 December to 9 December, market did rise above Bollinger band however it failed to sustain leading to slow fall in later days going back inside the Bollinger Band.

- **Trendlines and Support-Resistance**

Throughout the year, the prices of Dogecoin, Shiba Inu, and Pepe consistently reacted to key support and resistance levels, which served as significant turning points in the market. These levels, when combined with trendlines, provided a clearer view of the price movement and potential breakouts or trend reversals.

a. Dogecoin

Chart 3.1 analysing Dogecoin through S/R levels and Trendlines

Observation- From chart 3.1, Support and Resistance lines were respected throughout the year where they appeared to act as a bouncing line which market respected for a period before breaking out.

During the phase of April-November until the American election the Market was consistently bouncing off s1 level and correcting itself when touching R1 and R2 levels. However, when the Resistance lines where broken the market saw a huge surge for a month.

Eventually falling down a month later S2 where it bounced for few days.

Regarding trend lines only 3 were observed with b and A being major impact with Market consistently bouncing on them before a huge Price hike(in case b) and huge fall (in case A).

b. Shiba Inu

Chart 3.2 analysing Shiba Inu through S/R levels and Trend lines.

Observation- From chart 3.2 Firstly a very strong resistance line r2 has significantly impacted market momentum firstly in mid-March and then directly correcting itself after failing to cross in end of November to start of December. Secondly, s2 was proven to be strong support from July-October where the market successfully stood above the said level. R1 was another powerful level where it acted as a support from march to June after a fall in mid-June it acted as a resistance until November. After a great breakout it then again acted as a support for the huge surge to stand upon for a whole month until eventually moving around it.

c. Pepe

Chart 3.3 analysing Pepe through trend lines and S/R levels

Observation- From chart 3.3, Firstly, the Trend lines A, C and B acted as a trampoline for the market for a month each from May-Jun, Jun-July and Oct-Nov respectively.

Market gained great support for significant months from the s1, s2 from March up to November. Even R0 acted as support from June-august after which it continued to be a resistance line which eventually market crossed to higher heights in November, after These 2 new levels were found with r3 being a lifetime high for Pepe eventually taking support at r2 for few days before falling eventually failing to cross it again in January of 2025.

After reaching a lifetime high market observed a sharp decline before landing on R1. R1 which was a lifetime high line for the coin in the end of May appear to act as a new support line for the declining market eventually respecting it until today.

- **Candlestick Patter**

  For the following charts, Icons have been used to indicate has a marking for a unique candlestick pattern that has significantly used has an indication of bullish or bearish signal.

  Please check the Methodology section for the legend (table A1) on understanding what icons indicates

a. Dogecoin

Chart 4.1.1 Identification of candlestick pattern

Chart 4.1.2 Identification of candlestick pattern

Observation-

Engulfing pattern- Engulfing pattern was observed identified twice once a bullish a once bearish which impacted the market successfully changing the trend of market.

Hammer and Shooting star- Two shooting star did exist however they were very small and followed Bearish trend, but it was extremely slow and short followed by Flat market in their period. No hammer candlestick was observed throughout the year.

Doji- One Doji candle and One Dragon fly Doji were observed. Doji candle did provide a signal for buying but the bullish market was followed a day later

Three White Soldier and Three Black Crows- Three white Soldier was observed twice a year with each time providing a great bullish signal followed by good bullish run and one three Black crow candlestick pattern was also observed once indicating strong bearish presence in market after the sideways market.

b. Shiba inu

Chart 4.2.1Identification of candlestick pattern

Chart 4.2.2 Identification of candlestick pattern

Observation-

Engulfing pattern- No engulfing pattern were identified during the analysis period.

Hammer and Shooting star- One shooting star and One hammer which observed to be great indicator of the bearish and bullish signal respectively.

Doji- While Doji candles may have occurred during the analysis period, their lack of noticeable impact on price movements rendered them insignificant for this study.

Three White Soldier and Three Black Crows- Three White Soldier was identifying at the start of the year and Three black Crows was identified at the near end of the year significantly impacting markets trend.

c. Pepe

Chart 4.3.1 Identification of candlestick pattern

Chart 4.3.2 Identification of candlestick pattern

Observation-

Engulfing pattern- Two Bearish Engulfing brought down the market trend for a while, whereas a bullish engulfing at the start of December helped the market ride on a great bullish wave for a month.

Hammer and Shooting star- No hammer or shooting star were observed throughout the year.

Doji- Formation of Doji candle impacted the market twice this year, where mid-April Doji changed the trend to positive and its formation and the end of June observed a sharp fall. Biggest impact was observed by the formation of dragonfly Doji at end of December which changed the direction of sharp fall completely to bullish market.

Three White Soldier and Three Black Crows- Both the candlestick pattern was observed twice a year, indicating to the fact that pepe coin may be affected by the formation of these candlesticks more than other candlestick pattern which indicates its strong impact.

Discussion of Result

The analysis of memecoins—Dogecoin, Shiba Inu, and Pepe—through the lens of technical indicators has provided critical insights into their price movements, the applicability of traditional analytical tools, and the unique challenges posed by extreme market volatility. While certain technical patterns emerged, their reliability was often impacted by the speculative and hype-driven nature of these markets.

1. **Reliability**

   The study demonstrated that, despite the market being highly volatile and speculative in nature, basic technical indicators such as Support-Resistance, Moving Average, Bollinger Band, Trendlines and Candlesticks patterns retained a degree of a reliability.

   Moving Averages (SMA and EMA):

   SMA consistently acted as a support or resistance line in both Dogecoin and Shiba Inu. This was evident in repeated rebounds or corrections at specific SMA levels, such as during Shiba Inu's strong support at S2 from July to October. However, the high volatility of Pepe limited the effectiveness of SMA and EMA in identifying consistent patterns. Golden and Death Crosses were observed in Dogecoin and Shiba Inu, but these signals were occasionally accompanied by fake breakouts, emphasizing the role of sustaining trends over transient crossovers.

   Bollinger Bands:

   Bollinger Bands proved effective in identifying overbought and oversold conditions for all three memecoins, with the markets generally respecting the bands. Notable deviations, such as the sharp rise above the upper Bollinger Band in Dogecoin during November, indicated temporary bullish runs. Similarly, Pepe showed a brief breakout above the upper band in December, but this was unsustainable, eventually leading to a decline back within the bands. These observations suggest Bollinger Bands remain a useful tool for identifying potential reversals, even in volatile markets.

   Support and Resistance Levels:

   Consistent reactions to Support and Resistance (S/R) levels across all three memecoins were observed, reinforcing their relevance even in speculative markets. For example, Shiba Inu's R2 resistance line significantly impacted market momentum during March and December, while Dogecoin's prolonged interaction with R1 and S1 levels from April to November highlighted these levels as critical turning points. However, the reliability of S/R levels in predicting price movements diminished during periods of extreme market hype or news-driven volatility.

2. **The Role of Volatility in Influencing Observed Patterns**

The extreme volatility in the memecoins posed both opportunities and challenges in applying traditional technical indicators:

Fake Breakouts:

Fake breakouts were a recurring phenomenon across multiple indicators, particularly Bollinger Bands and Moving Averages. For instance, Shiba Inu exhibited numerous fake breakouts during September, where price movements briefly signalled trends but failed to sustain them. Similarly, Dogecoin experienced three fake breakouts beyond the Bollinger Bands, which were quickly followed by sharp reversals. These instances highlight the susceptibility of memecoins to short-lived hype and sentiment-driven movements that undermine the reliability of conventional technical signals.

Inconsistent Patterns in Pepe:

Pepe exhibited fewer observable patterns compared to Dogecoin and Shiba Inu, largely due to its higher volatility and less mature market structure. For example, SMA and EMA were less effective in providing clear support or resistance levels, and fewer sustained Golden/Death Crosses were identified. This suggests that newer or less established memecoins may exhibit even greater variability, reducing the applicability of traditional tools.

3. **Observations from Candlestick Patterns**

Candlestick patterns provided mixed results across the three memecoins. While some patterns, such as Three White Soldiers and Three Black Crows, effectively indicated bullish and bearish trends, others, like Doji and Hammer, had limited impact:

Dogecoin exhibited a clear market response to candlestick patterns such as Three White Soldiers, which preceded bullish runs. However, Shooting Stars led to only minor bearish corrections, and no Hammer patterns were observed.

Shiba Inu’s reliance on candlestick patterns was inconsistent, with some patterns like Three White Soldiers proving impactful, while others, such as Doji candles, were negligible.

Pepe showed a stronger reaction to candlestick patterns compared to the other memecoins. For example, the formation of a Dragonfly Doji at the end of December reversed a sharp bearish trend, leading to sustained bullish momentum.

Implication of the Results –

For Traders- The study underscores that traditional technical indicators can provide actionable insights into highly speculative and volatile markets. However, traders should account for the higher likelihood of fake breakouts and transient trends when analysing memecoins. Combining visual analysis with other tools, such as sentiment analysis or volume data, may enhance the reliability of trading decisions.

For Future studies- The observed patterns challenge the assumption that memecoin markets are entirely irrational or driven solely by hype. Instead, they reveal that even chaotic markets can exhibit structure and respond to technical levels. This opens the door for further research into the application of traditional analytical tools in unconventional asset classes.

CONCLUSION

The Visual ananlysis demonstrated that moving avergaes effectively identified the buy and sell signal with, golden and death crosses providing reliable trend indications in Dogecoin and Shiba Inu. The SMA also found to be an effective as support and resistance line in all the Three memecoins. Bollinger Bands were consistently respected across all three coins, underscoring their reliability in identifying overbought and oversold conditions, although fake breakouts were observed in certain volatile periods. Candlestick patterns such as Three White Soldiers and Dragonfly Doji proved significant in predicting bullish momentum, particularly in Pepe.

These findings highlight the utility of visual-based technical analysis in volatile and speculative markets like memecoins. The study provides a foundation for traders to leverage simple and accessible tools for decision-making in high-risk environments.

Despite these insights, the study's reliance on visual analysis and its limited scope to three coins may restrict the generalizability of the findings. Further quantitative and cross-market studies are required to validate these observations.

In conclusion, this study contributes to the growing body of knowledge on technical analysis in unconventional markets, providing valuable insights for both novice and experienced traders in navigating the high volatility of memecoins.

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CONSUMER BEHAVIOUR AND PREFERENCES IN THE DIGITAL AGE: A COMPREHENSIVE ANALYSIS IN CONTEMPORARY MARKETING

Dr. Nalanda Wani
Coordinator, Research Centre, HOD Commerce, Indira College of Commerce and Science, Pune-33
nalanda.wani@iccs.ac.in

Miss Yasmin M. Chaudhary
Research Scholar,
Indira College of Commerce and Science, Pune-33
yasminchaudhary4@gmail.com

Abstract:

The research paper aims to provide a comprehensive analysis of consumer behaviour and preferences in the digital age, focusing on their implications for contemporary marketing strategies. The study deals with various factors that influence consumer choices and explores the roles of digital technologies, social media, personalization, and ethical considerations in shaping consumer behaviour. Additionally, the paper examines emerging trends in marketing and suggests strategies for businesses to effectively engage and cater to the modern consumer.

Keywords: Consumer behaviour, Digital age, Marketing strategies, Digital technologies, Social media, Personalization, Ethical considerations, Emerging trends

Introduction:

The digital age has changed the way people live, communicate, and make decisions, with the immense use of the smartphones, internet, and various digital platforms. Consumers today have quick access to all the information and various products and services, which results in significant changes in the way consumers behave. Online research, reviews of the products and services and comparison between them is the result of traditional advertising and word-of-mouth marketing. Social media plays a key role in shaping opinions and building brand loyalty, whereas AI and big data advancements helps businesses in personalization of marketing strategies. For businesses to excel in today’s competitive market, it is important to properly understand all these changes taking place.

The current paper is thus an attempt of the researcher to study and understand these changes in the behaviour of consumers, focusing on digital technologies, social media, and personalization of marketing strategies which are reshaping the decision-making processes and preferences of consumers. The aim of this study is to give an insight into the changing and growing landscape of modern consumer behaviour and at the same time gives suggestions for businesses to adapt to these changes in an effective manner.

Objectives of the Study:

1. To study modern consumer behaviour
2. To identify key factors influencing consumer choices
3. To examine the impact of digital technologies on consumer behaviour
4. To evaluate the role of social media in shaping consumer preferences
5. To assess the significance of personalization in marketing strategies
6. To explore ethical considerations in consumer decision-making
7. To propose effective marketing strategies for the modern consumer
8. To predict emerging trends in marketing and consumer behaviour

Research Methodology:

- Exploratory Research method has been largely used for this study.
- The universe for this study comprises of individuals and consumers who actively engage in digital platforms, make use of digital technologies, and are influenced by the digital landscape in their purchasing decisions and interactions with brands.
- Thus, the sample frame of this study includes all the individuals between 18 to 65 years of age living in PCMC area of Pune who actively use the internet and digital platforms.
- A total of 100 respondents were selected falling under the above sample frame on the basis of Convenient Random sampling.
- The present paper is based on both Primary as well as Secondary data.

1. For Secondary data various websites, blogs, related online articles and research papers were referred.

2. Primary data has been collected with the help of google form questionnaire.
The data thus collected has been studied, analysed and the outcomes of the same has been presented in the given paper.

Literature Review:

Understanding Consumer Behaviour

Consumer behaviour explains how consumers decide to buy, use, or discard off the products, as a result of psychological, economic and sociological influence.

- Psychological Factors: These factors are influenced by thoughts of a person, his/her feelings, and motivations (for example, Maslow's Hierarchy of Needs gives importance to basic human needs first than other higher-level wishes).
- Sociological Factors: Sociological factors are driven by society, groups and culture (for instance, The Social Proof Theory suggests that people generally tend to follow popular views and opinions).
- Economic Factors: Financial conditions give rise to economic factors (the best example for economic influence would be the Law of Demand which states that lesser the price higher the demand and vice versa).

  All the above factors make it easier for businesses to build up strategies that are in line with the needs and preferences of the consumers. (Schiffman & Kanuk, 2010; Kotler & Armstrong, 2016).

Evolution of Consumer Behaviour in the Digital Age

Technological developments have led to the evolution of consumer behaviour. In the earlier times, TV, newspapers and radio, were the major sources of information for the consumers. Then came the internet which completely revolutionized this by providing quick and easy access to product research. Amazon and eBay and various other E-commerce platforms completely transformed the retailing process by offering variety, options and convenience all at the same time. The purchasing decisions were now highly influenced by the presence of social media, peer recommendations and online reviews. The increase in the use of smartphones and mobile commerce improved shopping accessibility, whereas personalization led to recommendations. Today, the emerging technologies like virtual reality (VR) and augmented reality (AR) have further boosted confidence in online purchases, thereby feeding consumers with a lot more information than before. (Smith et al., 2012; Kotler et al., 2009).

Factors Influencing Consumer Choices

Various factors such as social, psychological, cultural, and even situational influence the choices of the consumers. Psychological factors such as needs, perceptions, and past experiences of the consumers give rise to their choices and preferences. Recommendations from peer, influence of family and friends, and reviews through social media, supported by digital platforms are significant social factors impacting consumer choices (Kotler et al., 2016). Globalization and societal values powered by the increased exposure to internet are key cultural factors influencing consumer preferences (Solomon et al., 2016). Consumer buying decisions are often driven by situational factors such as time constraints, ease and convenience, where mobile applications and online shopping make buying more spontaneous and quicker. All-together, these factors are play a key role in determining how and why consumers make their purchasing decisions.

Impact of Digital Technologies on Consumer Behaviour

Digital technologies have completely changed the way consumers today behave by making online shopping highly accessible with the help of e-commerce platforms. Consumers today can make a purchase anywhere and at any time by using their smartphones and computers, pointing a shift towards online platforms (Smith & Brynjolfsson, 2001). Mobile phones have further made easy the instant shopping and quick decision making (Barnes & Corbitt, 2003). The Internet of Things (IoT) which includes wearables and smart speakers, boosts shopping with the help of voice-enabled purchasing options and recommendations that are customized and personalized (Evans, 2014). Digital technologies thus can be said to have transformed the overall consumer shopping experience and behaviour which makes online shopping crucial to modern consumer behaviour.

Role of Social Media in Shaping Consumer Preferences

Social media platforms like Instagram, Facebook and Twitter greatly impact brand perception and consumer behaviour. These platforms help the users to share their views, opinions, recommendations and experiences, which shapes up the purchasing decisions of others. For an instance, good reviews from relatives and friends or endorsements by celebrities and influencers often shape up the choices of the consumers (Smith et al., 2012).

In addition to the above, brands can directly interact with their audiences through social media, share updates with them, share promotions, and other interactive content, making sure they keep up a constant brand exposure that results in shaping up the preferences of consumers in due time (Muntinga et al., 2011).

Importance of Personalization in Marketing

Li & Kannan, 2014, in their study titled ‘Dynamic pricing on e-commerce platforms: Empirical analysis and theory’ state that personalization in modern marketing tailors experiences to individual preferences using data analytics and consumer segmentation.

Businesses analyse purchasing patterns—what, when, and how often consumers buy—to understand preferences and group similar customers together.

For example, hiking enthusiasts might receive tailored ads for hiking gear. This approach creates a sense of being understood and valued, enhancing customer satisfaction and fostering loyalty (Smith, Fischer & Yongjian, 2012). Personalization ensures businesses offer relevant products, improving the overall customer experience.

Ethical Considerations in Consumer Decision-Making

According to the study done by Kotler & Lee, 2005, ethical considerations highly impact the choices of the consumers, with growing liking for companies that practice Corporate Social Responsibility (CSR) and take up various other sustainable practices such as supporting local communities, making use of eco-friendly materials, and taking efforts in reducing waste. In addition to that, ethical marketing—defined by honesty, transparency and avoidance of unfair practices—is important for gaining and strengthening consumer trust (Peattie & Peattie, 2003). Companies that give due significance to these practices are more likely to gain success in the long run and build a firm customer loyalty.

Data Analysis:

Below is the analysis of the research data provided by the respondents, collected through a well-designed research questionnaire.

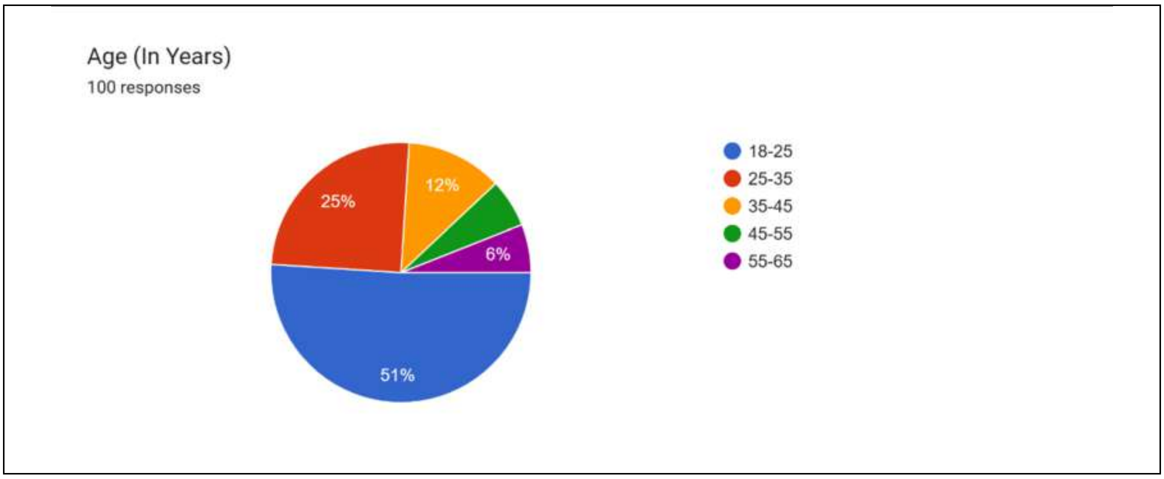

Fig.1. Age distribution of respondents

Talking about the age of the respondents, a majority of respondents (51%) are young adults aged 18–25, dominating digital consumer behaviour. The second-largest group, aged 25–35, comprises 25%, showing strong engagement from early to mid-career individuals. Adults aged 35–45 make up 12%, while those aged 45–65 represent 6%

each, indicating lower but notable digital activity among older consumers. This highlights the strong influence of younger demographics on digital trends.

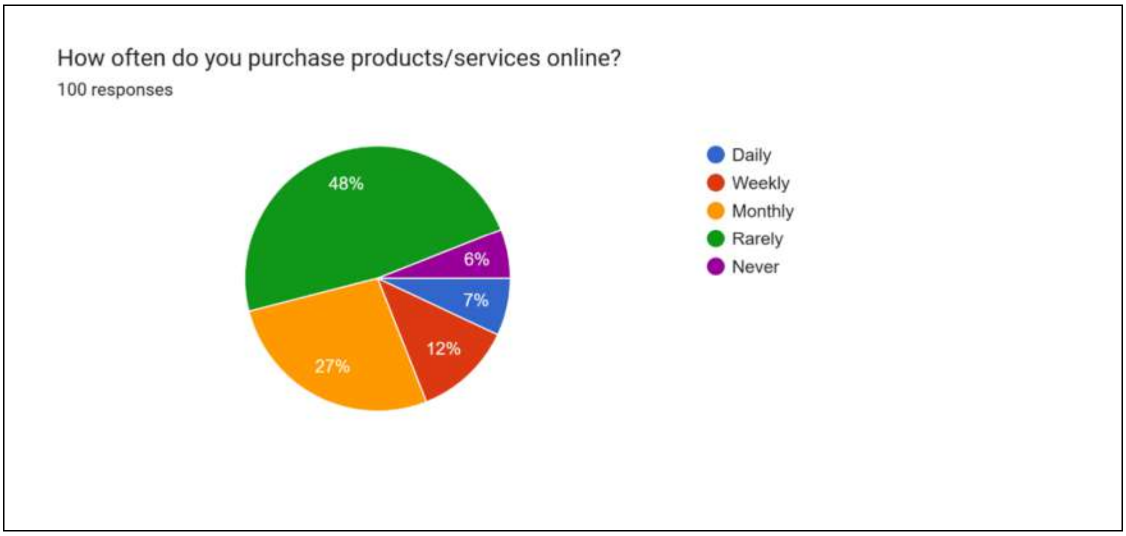

Fig.2. Online Purchase Frequency

As per the above diagram, nearly 48% of consumers rarely shop online, showing that online purchasing is not yet a frequent habit for many. About 27% make purchases monthly, while 12% do so weekly. A small group, 7%, shops online daily, while 6% never use online platforms. This indicates that online shopping is still not a daily activity for most consumers.

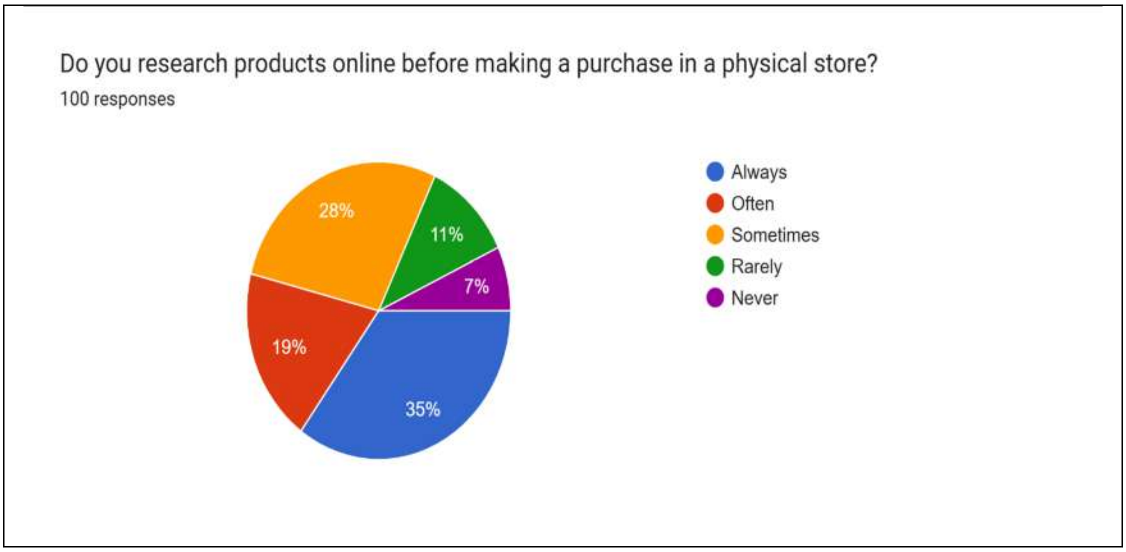

Fig.3. Research Before Purchase

The above pie-chart states that a significant majority of 82% of consumers research products online before buying them in physical stores. This includes 35% who always do so, 28% who sometimes do, and 19% who often research. Only 11% rarely and 7% never research online. This makes it clear that online information plays a crucial role in helping consumers make decisions.

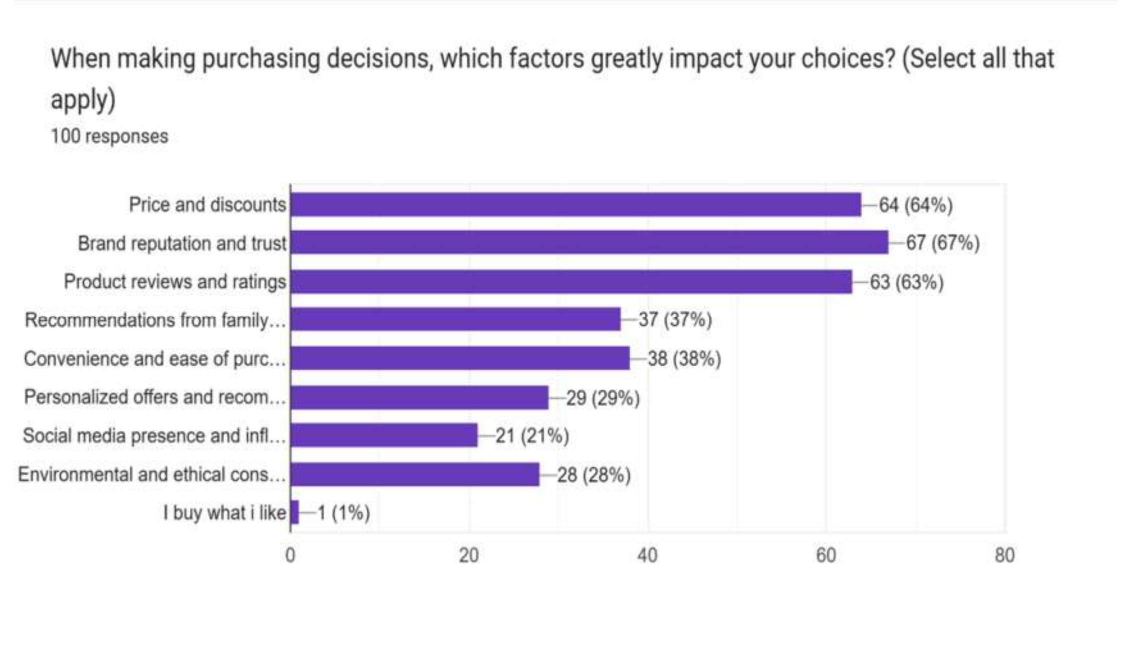

Fig.4. Factors Impacting Purchasing Decisions

According to the above graph, the top factors influencing consumers' choices are:

- Brand reputation and trust: 19.3%
- Price and discounts: 18.4%
- Product reviews and ratings: 18.1%

These results highlight that trust, pricing, and reviews are the most important factors for consumers.

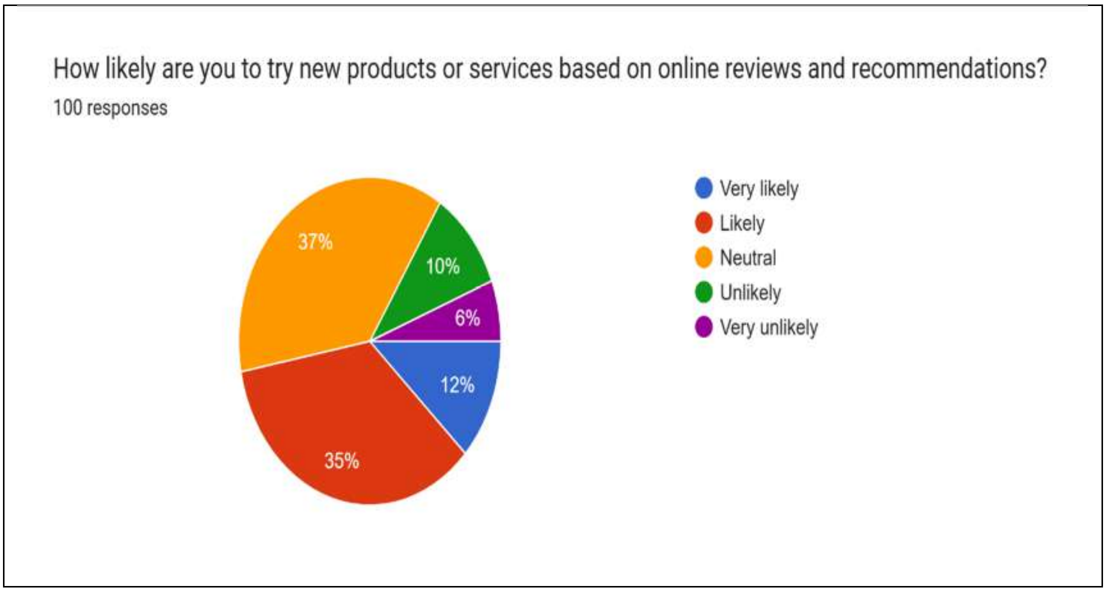

Fig.6. Influence of Online Reviews

The above pie-chart depicts that online reviews and recommendations have a moderate to high impact on decisions for most consumers. 37% feel neutral about their influence and 35% are likely to try products based on reviews whereas 12% are very likely to do so. This indicates that online reviews are a valuable tool for guiding consumer choices.

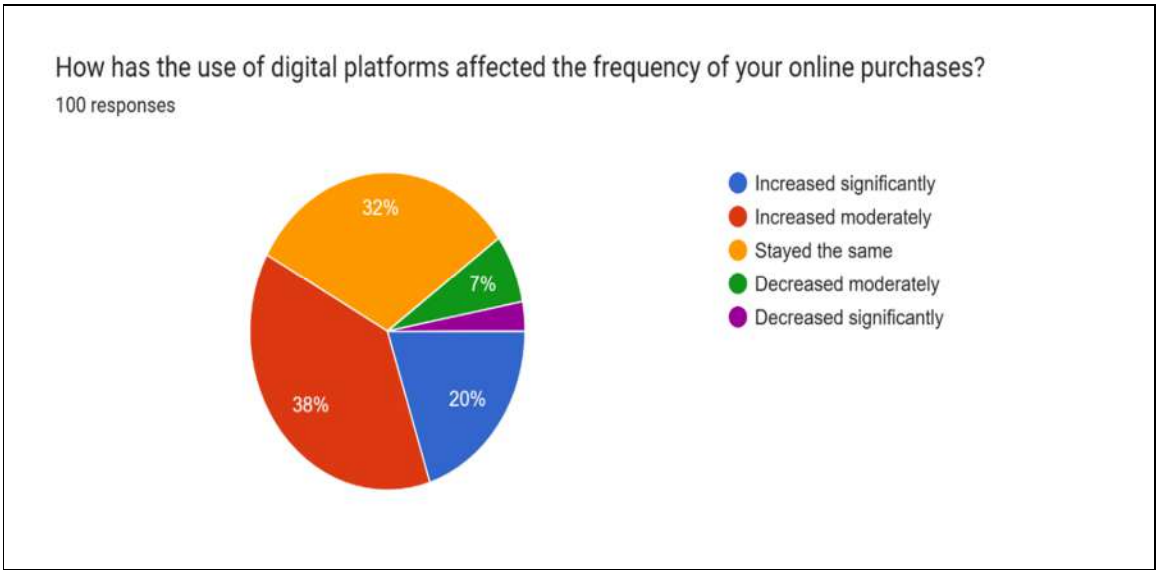

Fig.7. Effect of Digital Platforms on Purchasing Frequency

A majority of the people feel that digital platforms have led them to shop more often. About 38% said their shopping increased moderately, and 20% said it increased significantly. Meanwhile, 32% feel their shopping frequency hasn't changed. Only a small number (10%) noticed a decline in their online shopping habits.

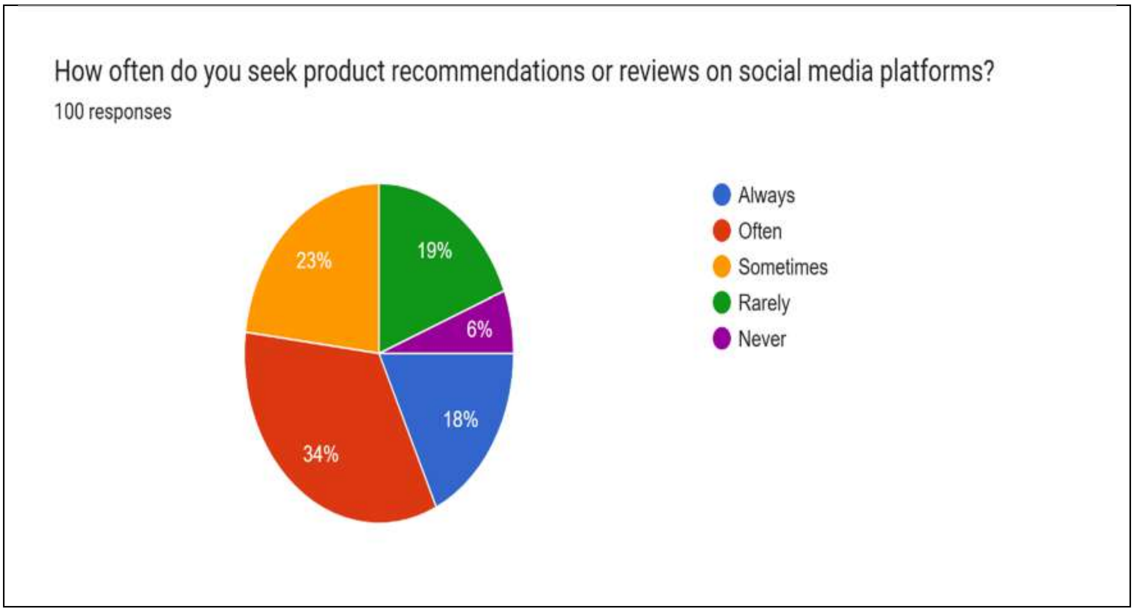

Fig.8. Social Media Influence

Most people actively use social media to check reviews or get recommendations about products. Around 34% of respondents said they often do this, while 23% said they sometimes do. Some people (18%) always rely on social media for this purpose, whereas 19% rarely do, and only 6% never use social media for product suggestions.

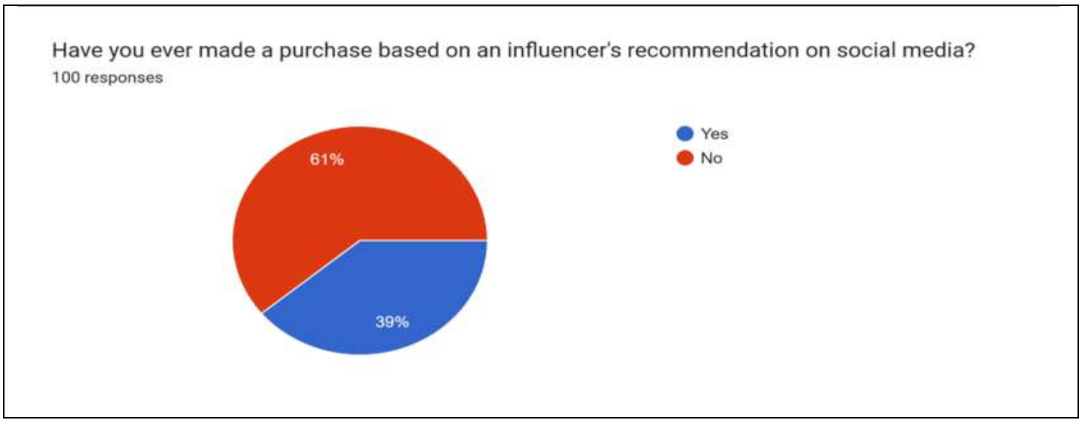

Fig.9. Influence of Social Media Influencers

As seen in the pie diagram above, about 39% of respondents have purchased something based on a social media influencer's recommendation. However, the majority (61%) said they haven't been influenced by influencers in their buying decisions.

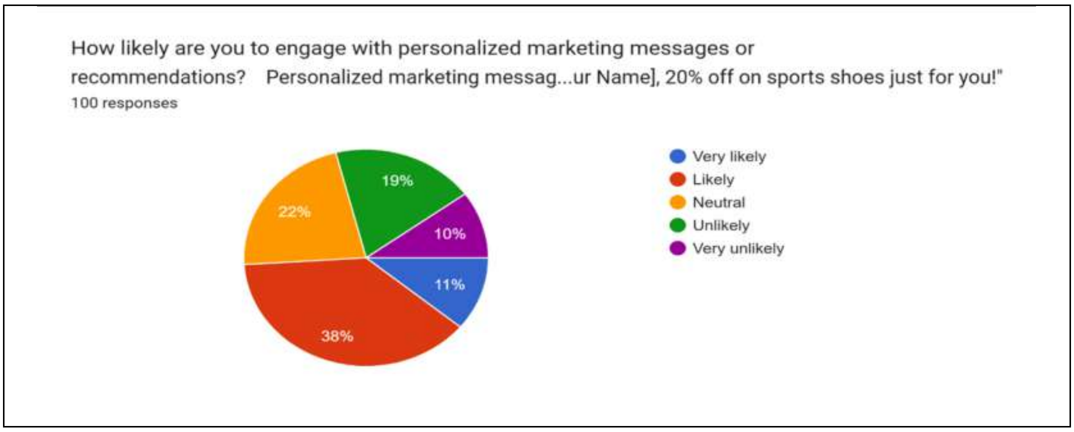

Fig.10. Engagement with Personalized Marketing

Figure no. 10 tells us that personalized marketing messages, such as offers tailored to individual preferences, get a mixed response. About 49% of people are likely or very likely to engage with such messages, while 22% feel neutral about them. Roughly 29% of respondents are unlikely to respond to personalized marketing.

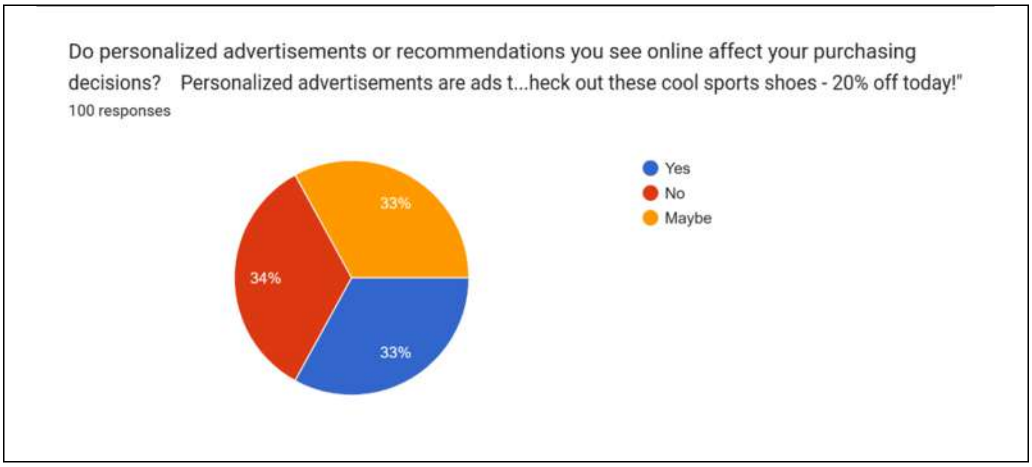

Fig.11. Impact of Personalized Advertisements on Purchasing Decisions

When it comes to ads designed specifically for individuals, opinions are divided equally. One-third of respondents believe such ads impact their buying decisions, another third think they don't, and the remaining third are unsure.

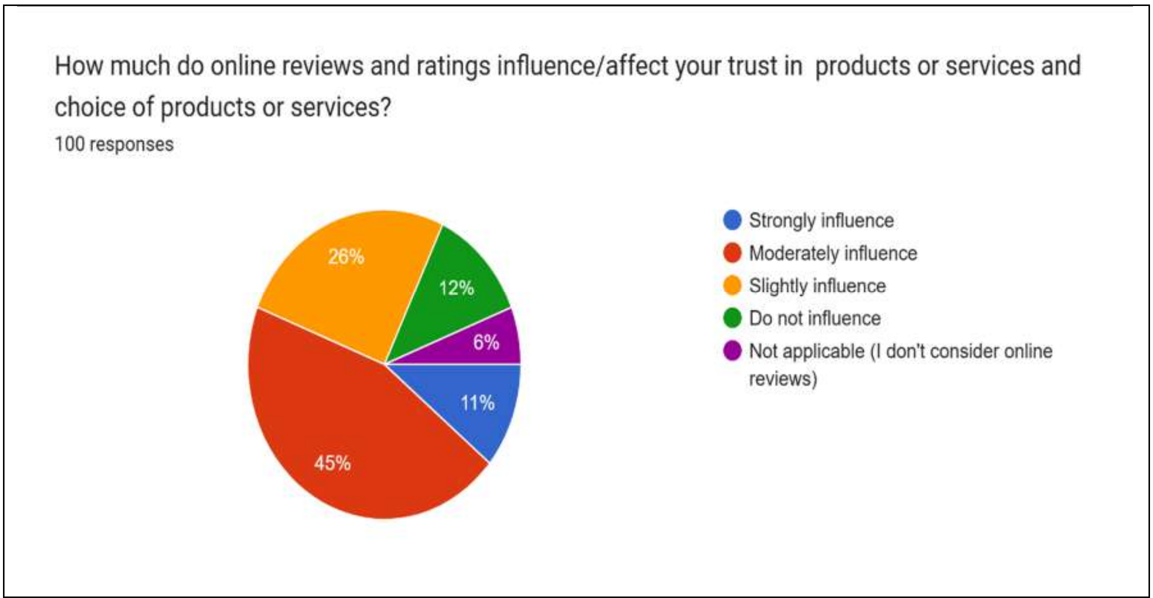

Fig.12. Trust in Online Reviews and Ratings

The above pie-diagram is the result of a Likert-scale question which was included in the research questionnaire to know how important are online reviews and ratings for consumers. About 45% of respondents said reviews moderately affect their trust and decisions, while 11% said they strongly influence them. However, 26% feel reviews only slightly matter, and 12% said reviews don't influence them at all.

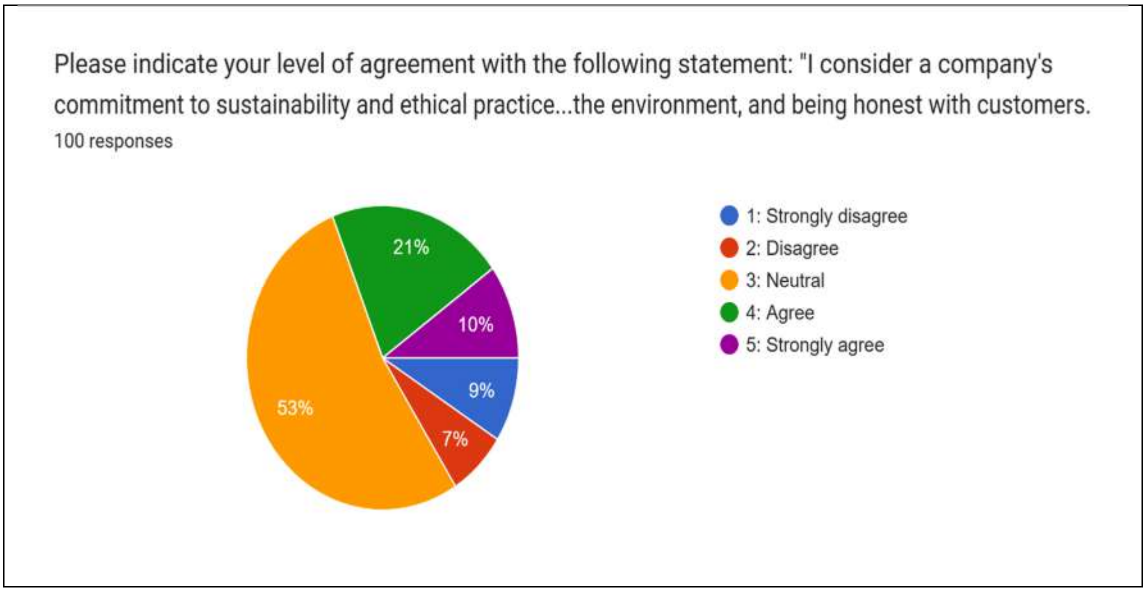

Fig.13. Willingness to Pay for Ethical Products

A majority of respondents (62%) are willing to pay more for products that are ethically made, such as those produced in environmentally friendly or fair ways. This shows that many consumers value responsible business practices, though 38% are not willing to pay extra for such products.

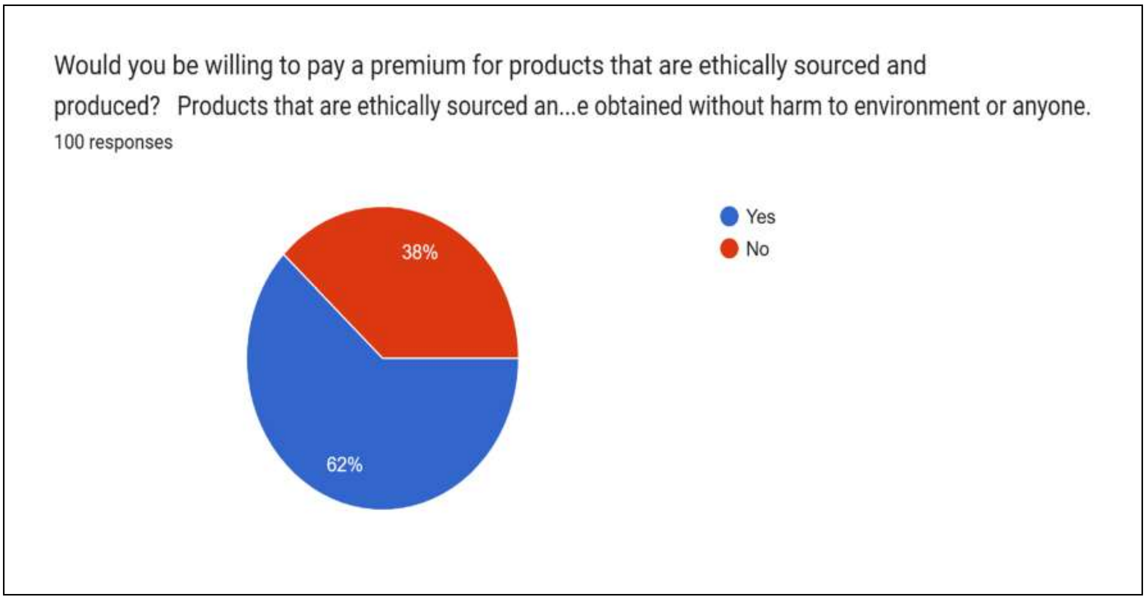

Fig.14. Willingness to Pay More for Ethical Products

The above pie chart makes it clear that most people are ready to spend extra money on products that are made ethically. About 62% of respondents said they would pay a premium for items that are produced responsibly—meaning they protect the environment and ensure workers are treated fairly. However, 38% of respondents are not willing to pay more, may be because they prioritize affordability.

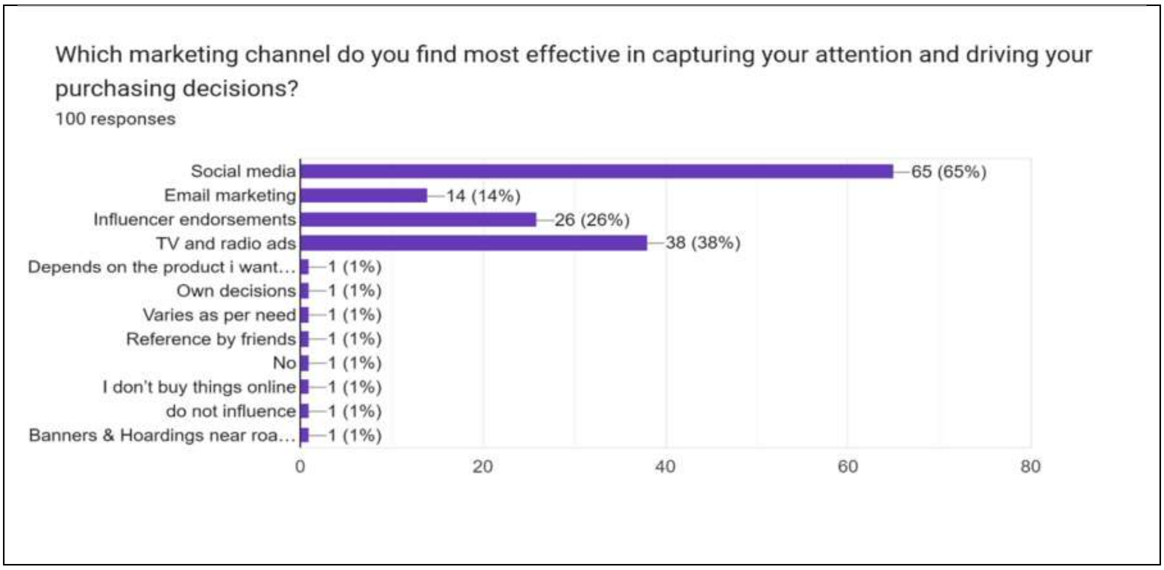

Fig.15. Most Effective Marketing Channels

As seen in the above graph, social media is the most powerful way to reach consumers, as 30% of respondents said it grabs their attention the most. Some people also prefer a mix of social media with TV and radio ads (11%) or influencer endorsements (12%). Email marketing is less popular but still works for 6% of respondents. This tells us that businesses should focus on using social media and combining it with other channels to be more effective.

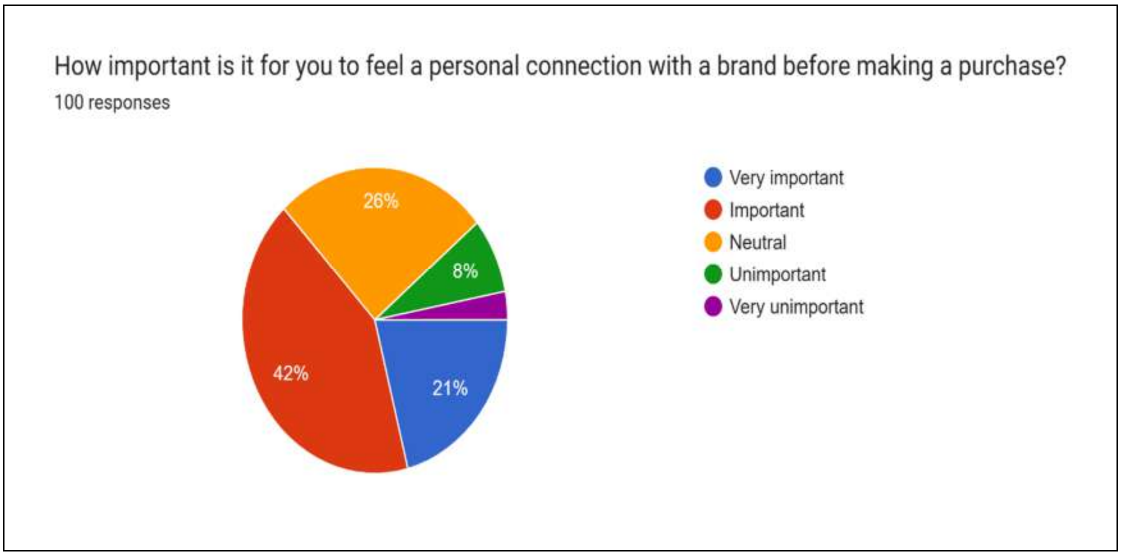

Fig.16. Importance of Personal Connection with Brands

The figure above depicts that most people value a personal connection with brands. Around 63% of respondents said it's either important or very important to them. However, 26% were neutral, and only 11% said it didn't matter much. This means companies should focus on building trust and emotional connections with their customers.

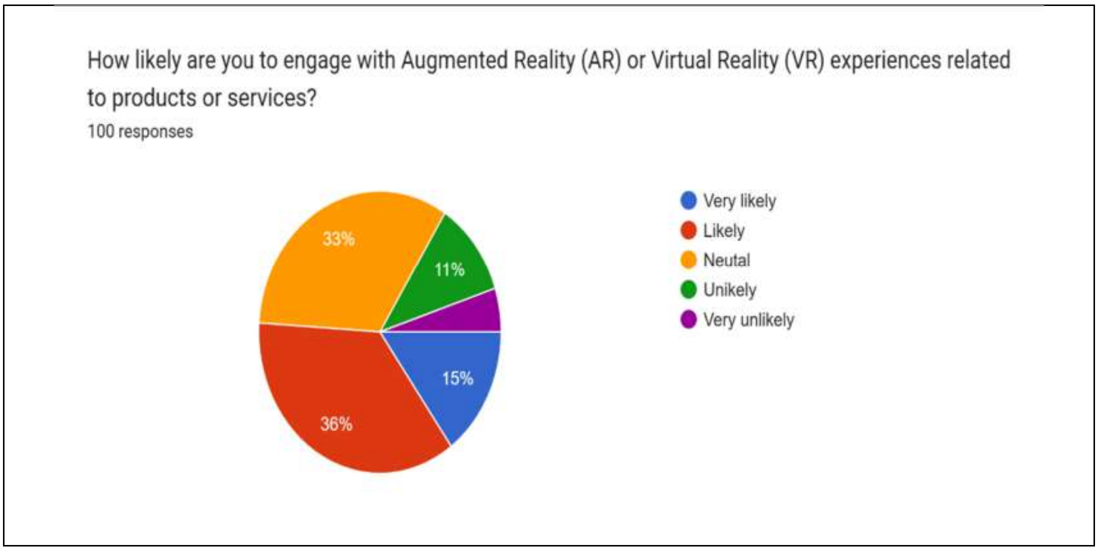

Fig.17. Engagement with Augmented Reality (AR) or Virtual Reality (VR)

As seen in the above figure, many people are open to using Augmented Reality (AR) or Virtual Reality (VR) while shopping. About 51% said they are likely or very likely to engage with such experiences, while 33% were neutral. Only a small number (16%) said they would not use AR/VR. This shows that new technologies like AR/VR can help businesses create exciting experiences for customers.

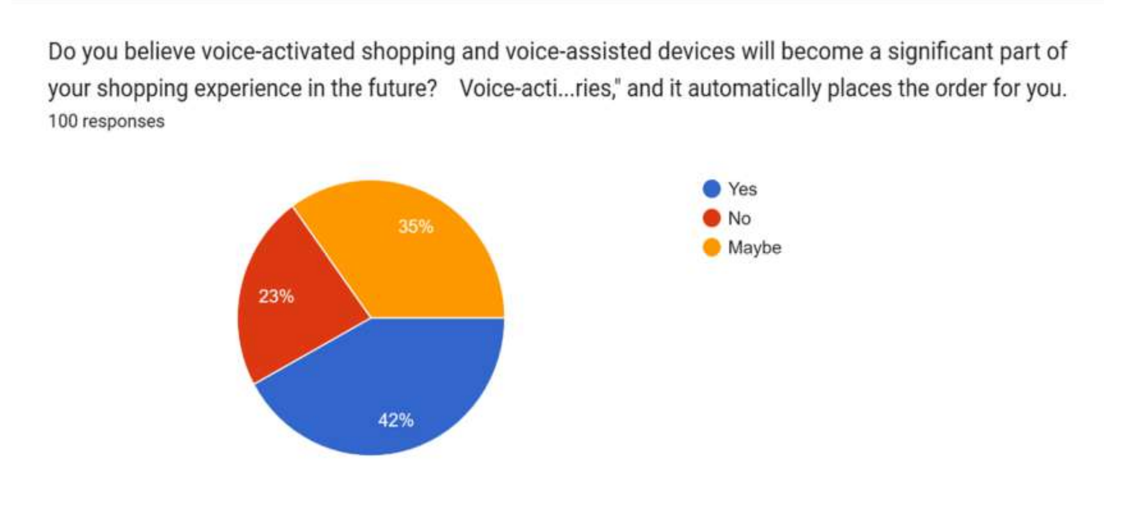

Fig.18. Future with Voice-Activated Shopping

The above figure clearly shows that voice-activated shopping, like using Alexa or Siri to place orders, seems to have a bright future. About 42% of people think it will become important, and 35% are unsure but curious. Only 23% don't believe it will have a big impact. This suggests that businesses should start preparing for this technology to stay ahead.

Key Themes and Concepts:

Key Theme	Description	Key Insights Gained
Consumer Behaviour Trends	Understanding how digital tools influence buying habits and preferences.	Frequent online purchases and digital research.
Digital Technology Impact	Examining the role of technologies in modern consumer decision-making.	Voice commands, AR/VR engagement remain moderate.
Role of Social Media	Identifying the influence of social media platforms on consumer decisions.	Social media ranks as a top marketing channel.
Personalization in Marketing	Assessing how tailored ads and product recommendations drive purchasing behaviours.	Mixed feelings on personalized ads' effectiveness.
Ethical Considerations	Exploring the importance of ethical and sustainable practices in influencing buying behaviour.	Divided willingness to pay premium prices.
Emerging Trends	Predicting future trends like AR/VR, voice shopping, and interactive campaigns.	Moderate adoption of AR/VR experiences.

Findings:

1. Modern Consumer Behaviour: The study shows that most consumers prefer shopping online weekly or monthly and often research products online before buying in stores while brand reputation, product reviews, and price discounts strongly influence their decisions.
2. Key Factors Influencing Consumer Choices: According to the analysis, brand reputation, product reviews, and price discounts are the primary factors in consumer choices. Again, social media has a significant impact, while ethical considerations are moderately important.
3. Impact of Digital Technologies on Consumer Behaviour: The researcher finds out that consumers are cautious about fully adopting voice-activated shopping, and AR/VR technologies have moderate use.
4. Role of Social Media in Shaping Preferences: The researcher learned that social media platforms, especially Instagram and Facebook, play a key role in product discovery and consumer decision-making.
5. Significance of Personalization in Marketing: As per the insights gained from the study, there are mixed reactions to personalized ads and recommendations, with some consumers indifferent to them.
6. Ethical Considerations in Consumer Decisions: In the given study, consumers show moderate interest in ethical practices, but only a small number are willing to pay a premium for ethically sourced products.
7. Effective Marketing Strategies for Modern Consumers: The researcher found out that social media is the most effective marketing channel. Also, ethical considerations and emerging technologies have a supportive role in decision-making.
8. Emerging Trends in Marketing and Consumer Behaviour: It has been revealed through the analysis that technologies like AR/VR and voice-activated shopping are still in early stages, but future consumer behaviour will focus on convenience, sustainability, and personalization.

Suggestions:

1. The researcher suggests that brands should focus on building a strong online presence, encourage customer reviews, and offer discounts and loyalty programs to attract repeat customers.

2. The researcher also recommends the brands to invest in brand-building to enhance trust, encourage customer reviews, and highlight ethical practices in marketing to appeal to consumers.
3. The researcher is of the opinion that brands should gradually introduce AR/VR experiences, provide tutorials for voice shopping, and focus on improving the usage of these technologies.
4. Brands should develop tailored marketing strategies for each social media platform, invest in influencer marketing, and engage audiences with interactive content.
5. The study also suggests that brands should be careful that personalized ads and recommendations are relevant, avoid over-personalizing, and use data insights to offer valuable recommendations.
6. Researcher suggests that it will be really beneficial for brands to clearly communicate their ethical practices, offer affordable ethical products, and ensure transparency in sourcing and production.
7. According to the insights gained from the study, brands should go for an omnichannel marketing strategy, use data analytics to optimize campaigns, and focus on creating interactive experiences to engage consumers.
8. Lastly, the researcher recommends that brands should test AR/VR technologies in pilot campaigns, consider integrating voice shopping, and be quick to adapt to new trends driven by technological advancements.

Conclusion:

The present study shows that digital technologies, social media, and personalization are transforming consumer behaviour. Consumers today prefer shopping online and often research products before buying them in stores. Brand reputation, reviews, and discounts are major factors in their decision-making process. Social media, especially Instagram and Facebook, highly affects product choices, whereas ethical practices are important but not a top priority for most of the consumers.

New technologies like voice shopping and AR/VR are still developing, and consumers are cautious about fully adopting them. Brands should introduce these technologies slowly and make sure they are convenient to use. Personalized advertisements are valued but it needs to be relevant and not overwhelming.

For success in the long run, brands should focus on an omnichannel presence, make proper and effective use of social media, thereby making content that is interactive.

They should also communicate their ethical practices clearly and provide ethical products at economical rates. By making these shifts, brands can build stronger consumer connections and stay competitive in the ever changing, ever evolving and highly competitive digital world.

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Appendix:

Link for the Research Questionnaire used for the purpose of data collection for the given study (Google form) https://forms.gle/fwcQoQpinxroknYd9

AN OVERVIEW OF OPTIMIZATION OF PORTFOLIO MANAGEMENT OF WOMEN INVESTORS USING ARTIFICIAL INTELLIGENCE (AI) TOOLS

Mrs Kalyani Oltikar

Research Scholar at Department of Commerce,

Pune Campus, S.N.D.T. University, Pune

oltikar.kalyani@gmail.com

Abstract:

The recent rapid acceptance of Artificial Intelligence (AI) tools are highly impacting various sectors such as medicine, healthcare, education, etc. Across the globe the leading sectors are highly preferring automation through AI tools. The AI Tools in Financial sector has automated the practice of portfolio management such as having introduced human – like problem-solving, understanding the natural language, analyzing the data, and decision-making, along with more advanced capital investment decisions, and accuracy in predicting future needs. This AI-generated results will help to predict the changes taking place in the markets more accurately, enabling the investors to make more intelligent choices. AI is structured to give real-time suggestions, enabling the investors to respond quickly to market revisions. In this research, the study will focus upon the various AI tools currently being used in portfolio management for women investors and assess their financial situations and challenges and limitations. This research will also consider the role of AI tools in portfolio management for women investors. This research study will also take an overview of AI-automated methods along with traditional portfolio management practices which will help to provide suggestions for the future of financial and portfolio management sector. Engaging AI tools in portfolio management will result in favorable situations as AI is expert at looking through vastly available financial data and finding trends that humans may miss.

Keywords: Finance, portfolio management, optimization, Technology, Artificial Intelligent Tools, Women investors.

Introduction of the Study

Over the past few years, the influence of economic globalization and technology innovations has drastically transformed the portfolio management sector. The demand for customized and interactive financial solutions is rapidly changing the scenario in the financial sector.

The increased integration of AI in the portfolio management calls for a more systematic approach towards the various techniques and applications involved, as well as the incidental opportunities and challenges they bring to the sector (CFA Institute Research Foundation, 2020).

India, being the fastest growing economy with the second largest population in the world, has a significant stake in the AI revolution. Recognizing AI's potential to transform economies and the need for India to strategize its approach, the NITI Aayog (June 2018) has adopted a three-pronged approach – undertaking exploratory proof-of-concept AI projects in various areas, crafting a national strategy for building a vibrant AI ecosystem in India and collaborating with various experts and stakeholders (NITI Aayog, June 2018).

Artificial intelligence in personal finance will reach millions of women investors with a comprehensive planner, advisor, and/or coach. Artificial intelligence is made available in an app which is available at all times and isn't restricted to business hours like traditional advisors and planners. The same careful analysis, coaching, planning, and insightful recommendations a human provides, are now available through artificial intelligence. The investment strategies will be based on personal risk tolerance and capacity. And spending plans created through AI will be based on the woman investors' values and habits. The obstacles to building portfolio are essentially removed through artificial intelligence. There will be other improvements to women's finances through artificial intelligence as well. Affordability and accessibility of professional financial guidance are the main among them (Hogan, 2024).

Objectives of the Study –

The objectives of this research study are:

1. To take an overview of AI-driven tools in portfolio management.
2. To compare AI-driven portfolio management methods with traditional methods.
3. To consider the role of AI tools in portfolio management for women investors.
4. To provide suggestions and recommendations on AI integration and application in portfolio management based on findings from industry best practices.

Review of Literature :

1] **AI in Investments:**

Unravelling User Perspectives and Decision-making Patterns in the Digital Age, a Study of Investor Preferences and Satisfaction Levels in AI-driven Investments Article - Dipalee Atre, et al. (August 2024) 5 Publications 2 Citations: This study examines the investor's preference and satisfaction levels regarding AI-driven investments, determines the most influential aspect of choosing AI-based investments, and evaluates the relationship between demographic factors and investors' preference and satisfaction towards AI-driven investments. Additionally, this study examines awareness of various AI tools.

2] **Artificial Intelligence in Finance –**

Dr D. Divya, et. al (February 2024) 58 Publications 73 Citations: This research paper explores the pervasive influence of Artificial Intelligence (AI) in the realm of finance, investigating its multifaceted impact on the industry. The study encompasses a comprehensive analysis of AI applications, focusing on its transformative effect on operational processes, decision-making paradigms, and the overall trajectory of the financial sector. This research paper contributes a comprehensive and insightful analysis of the impact of AI in finance, offering valuable insights for industry professionals, policymakers, and stakeholders navigating the dynamic intersection of artificial intelligence and financial services.

3] **IMF DEPARTMENTAL PAPERS - Powering the Digital Economy (Oct 2021):**

This paper explores the use of artificial intelligence (AI) and machine learning (ML) in the financial sector and the resultant policy implications. It provides a nontechnical background on the evolution and capabilities of AI/ML systems, their deployment and use cases in the financial sector, and the new challenges they present to financial sector policymakers.

4] **ARTIFICIAL INTELLIGENCE IN ASSET MANAGEMENT, Research Foundation Literature Review, Söhnke M. Bartram, Jürgen Branke, and Mehrshad Motahari, 2020 CFA Institute Research Foundation, ISBN 978-1-952927-02-7 -:**

The study undertaken in this literature review document provides a comprehensive overview of a wide range of existing and emerging applications of AI in asset management. The main focus of this literature review study is on three major areas viz. portfolio management, trading, and portfolio risk management. The study also provides an overview of trends in AI, most common AI techniques used in asset management, AI applications in portfolio management, trading, and portfolio risk management, the use of AI in robo-advising, the risks and concerns associated with AI. Discussion on possible disadvantages of using AI in asset management is done in this literature review.

5] **Artificial intelligence in finance - Bonnie G. Buchanan, PhD, FRSA (April 2019) [This work was supported by The Alan Turing Institute] [https://doi.org/10.5281/zenodo.2612537]:**

The paper describes the taxonomy and historical overview of AI, ML and DL, the global growth of AI, followed by three examples of how AI is changing the financial services industry, the differences between various ML techniques and traditional econometric methods, the impact of the emerging field of quantum computing on AI is discussed, the regulatory response to AI is provided also discussed in the concluding sections.

6] **National Strategy for Artificial Intelligence [NITI AAYOG] (June 2018):**

This strategy document is premised on the proposition that India, given its strengths and characteristics, has the potential to position itself among leaders on the global AI map – with a unique brand of #AIforAll. The approach in this paper focuses on how India can leverage the transformative technologies to ensure social and inclusive growth in line with the development philosophy of the government. In addition, India should strive to replicate these solutions in other similarly placed developing countries.

Scope and Limitations of the Study :

The scope of this research study is limited to evaluating AI-driven tools in the portfolio management sector. While AI has applications across various financial services, this study specifically focuses on AI tools in portfolio management aspects. By concentrating on portfolio management of women investors, this study provides a focused examination of various AI tools which may help to optimize asset growth, improve client satisfaction, and reduce operational costs.

The limitations of this study include the following:

There are vast number of fintech companies, policymakers, platforms, apps through which the financial services are available. In this study we will focus only on the AI-driven apps which are providing the financial products.

Research Methodology

This research employs a literature review methodology, focusing on secondary sources like academic articles, research papers, websites and industry reports to explore the application and effects of AI in portfolio management. The literature review enables an in-depth understanding of current trends, challenges, and opportunities in AI driven portfolio management.

The comparative analysis method will assess performance improvements in AI-integrated portfolio management practices, comparing them with conventional portfolio management strategies.

Sources of Data

1. **Primary Data Sources:**

   The primary data is not considered here as the study is based only on secondary data.

2. **Secondary Data Sources:**

   Secondary data is collected from government sources, industry sources and literature on AI and portfolio management, including articles and reports from reliable financial and technology sites. These sources provide background on AI tools in finance, as well as general portfolio management practices, wherein AI can also enhance traditional methods.

Some key areas where AI is integrated in the financial industry are discussed below [https://www.ibm.com]:

Algorithmic trading:

AI can be used to develop trading algorithms that can analyze market trends and historical data to make decisions and execute trades faster than humans.

Data analysis:

AI can analyze massive amounts of data and extract insights and trends that would be difficult for human data scientists to detect, enabling more informed decision-making and a deeper understanding of market behavior.

Fraud detection:

AI algorithms can prevent financial crime, such as fraud and cyberattacks, by identifying unusual patterns in financial transactions. This helps improve security in activities such as online banking and credit card transactions.

Predictive analytics:

AI can enable predictive modeling, which can help financial organizations anticipate market trends, potential risks and customer behavior.

Risk management:

AI can analyze data to help financial organizations assess and manage risks more effectively and create a more secure and stable financial environment.

Sentiment analysis:

AI can analyze news sources, social media and other information to gauge market sentiment, which can help predict market trends and influence decision-making.

Automation and efficiency:

AI can automate repetitive and time-consuming tasks, allowing financial institutions to process large amounts of data faster and more accurately.

Competitive advantage:

AI can help financial institutions foster innovation and stay at the forefront of technology, which can give them a competitive edge.

Compliance:

AI can automate monitoring and reporting requirements to ensure regulatory compliance

Credit scoring:

AI can analyze a variety of data, including social media activity and other online behavior, to assess customers' creditworthiness and make more accurate credit decisions.

Cost reduction:

By automating tasks, financial institutions can reduce manual labor, streamline workflows and improve operational efficiency, which can reduce costs.

Loan processing:

AI can better predict and assess loan risks, and streamline the process and approvals for borrowers by automating tasks such as risk assessment, credit scoring and document verification.

Personal finances:

AI tools can help people manage their personal finances by analyzing goals, spending patterns and risk tolerance to develop budgeting advice and savings strategies.

Customer service:

By answering questions and completing routine tasks 24/7, AI-powered personal assistants and chatbots can reduce the need for human intervention, provide personalized customer service such as real-time credit approvals, and offer consumers improved fraud protection and cybersecurity.

Portfolio management:

AI can analyze market conditions and economic indicators to help investors make better decisions and optimize their portfolios.

An overview of AI-based portfolio management:

To meet the general and specific financial goals, portfolio management is the strategic process which helps in selection and analyzing investments. A precautionary way of balancing risk and returns is a requirement while investing and diversifying in various assets. Conventionally the investments had a human touch regarding insights and expertise, which enhanced the investing process.

AI Tools are highly influencing the process of investment by analyzing extensive financial data, real-time monitoring, predictive modelling, algorithmic machine learning by aligning them and leading towards investor's goals and risk tolerance.

AI Tools provide accurate and timely information, helping them in recognising risks and enhancing their knowledge which enables them to take informed decisions, leading towards personalized strong portfolio building.

The manner in which AI Tools provide streamlined components in portfolio management process has been discussed below:

The data for portfolio management process is gathered from various relevant sources, such as- [https://www.leewayhertz.com]

- **Client profiles:**

  Detailed information on client demographics, risk tolerance, investment goals, and transaction history.

- **Market data:**

  Historical and real-time data on market trends, indices, commodities, forex rates, and other financial instruments from market data providers.

- **Regulatory filings:**

  Corporate filings such as annual reports, quarterly earnings, and other mandatory disclosures from regulatory bodies.

- **Research reports:**

In-depth analyses and forecasts from financial analysts, brokerage firms, and independent research organizations.

- **Asset valuation:**

  Data on the valuation of various assets, including real estate, securities, and alternative investments, often sourced from valuation firms and financial databases.

Now we will take a look at the different approaches of traditional methods of portfolio management and AI-driven portfolio management.

Aspect	**Traditional portfolio management**	**AI-based portfolio management**
1] Decision-making process	Primarily based on human analysis and expertise.	Relies on data-driven analysis and algorithms.
2] Data processing	Relies on manual data analysis and historical trends.	Employs advanced data analytics, machine learning, and predictive models to process and analyze vast amounts of data.
3] Decision making	Easier to explain and interpret due to well-defined rules and factors	Employs advanced algorithms that continuously learn and adapt
4] Information sources	Depends on financial reports, market analysis, and expert opinions.	Utilizes structured and unstructured data sources, such as news, social media, and real-time market feeds.
5] Investment strategies	Follows traditional asset allocation and diversification based on historical data and market trends.	Utilizes dynamic, adaptive strategies driven by machine learning and predictive analytics.
6] Adaptability and flexibility	Limited ability to adapt quickly to rapidly changing market conditions.	Adaptable and flexible in real-time, adjusting strategies based on live market data and dynamic conditions.

7] Risk management	Relies on historical risk assessments and manual risk mitigation strategies.	Incorporates predictive analytics for real-time risk assessment and proactive risk mitigation strategies.
8] Time efficiency	Relatively time-consuming due to manual analysis and decision-making processes.	Enables faster decision-making and execution due to automation and real-time analysis.
9] Human involvement	Highly dependent on human expertise and decision-making.	Involves a combination of human expertise and AI-based tools and algorithms for decision-making.
10] Predictive capabilities	Limited predictive capabilities, mainly relying on historical trends and analysis.	Enhanced predictive capabilities, leveraging machine learning and AI algorithms to forecast market trends and asset performance.
11] Response to market volatility	Often slower to respond to rapid market changes and may lead to delayed adjustments.	Rapid response to market volatility, enabling quicker portfolio adjustments in real-time.
12] Portfolio optimization	Traditional strategies for portfolio optimization based on historical data and analysis.	Dynamic and real-time optimization of portfolios using AI algorithms and adaptive models.

Source: https://www.leewayhertz.com

The adoption of AI in financial advising and portfolio management marks a significant move towards more efficient, precise, and personalized services. From investment strategy improvement to enhanced risk analysis, these AI tools offer financial professionals a competitive advantage. Embracing these technologies can help portfolio managers and financial advisors not only improve their service offering but also cultivate a more successful client relationship.

Here, in the following part of the study we will discuss about one AI-driven app with the name FIKAA which is specially developed for aspiring women investors.

FIKAA (An AI-driven Application specially developed for aspiring women investors'): https://www.fikaa.in

FIKAA is an AI-enabled mutual fund investment platform for women which uses algorithms to explore millions of potential investment opportunities. This Application is made available on Android and iOS platforms. FIKAA is on a Mission - Be Financially Free. FIKAA aims to spread financial literacy, create a safe community for like-minded women and urge them to take charge of their own finances! There are no Institutional or Angel investors in FIKAA.

FIKAA's B2B2C model enables businesses (B2B partners) to offer personalized financial solutions to their end customers (B2C) through FIKAA's AI-driven investment platform. They provide tools and resources to help your customers easily invest in Mutual Funds, Digital Gold, and more, fostering financial empowerment.

Products:

1] Mutual Funds 2] Digital Gold

1] Mutual Funds (FIKAA):

FIKAA is the ultimate Mutual Fund shop, where investment meets convenience. Track entire portfolio, explore the market to create a custom basket, or let FIKAA.AI find the perfect funds for tailored to investors' financial needs.

Start Investing with FIKAA.AI in 4 Simple Steps

4.1 STEP 1: **SELECT YOUR PREFERRED PORTFOLIO BASKET**

4.2 STEP 2: **CHOOSE YOUR INVESTMENT AMOUNT AND RISK LEVEL**

4.3 STEP 3: **VIEW RECOMMENDATIONS BASED ON YOUR CHOICES**

4.4 STEP 4: **COMPLETE KYC (KNOW YOUR CUSTOMER) PROCESS**

4.4.1 Complete your investment and be Financially Free

2] Digital Gold:

The investors can own 24K 999 pure Digital Gold, Digital Gold investment journey with just Rs 100, tailor-made for their goals. Certain features of FIKAA Digital Gold

- Zero making charges, no fraud, and no storage fees.
- Information is always private and all transactions are secured
- Get trusted and certified purity of BIS/NABL hallmarked Gold

- Insured doorstep delivery

Step 1. Pick Gold card

Step 2. Select SIP or Lumsum.

Step 3. FIKAA's 24K Pure Gold shine in financial plan.

With FIKAA’s simple 3-step process, gifting digital gold becomes seamless, meaningful, and a powerful way to show appreciation.

An upcoming Feature is being able to Convert 24K 999 Pure Gold in digital form into a physical gold coin and securely getting it delivered to investors’ doorstep in 1-2 weeks.

FIKAA’s EXPERTISE:

- **Seamless Integration –**
  Add the power of FIKAA platform with seamless integration and instant investment.
- **Theme Alignment –**
  FIKAA’s dashboard customized for a consistent experience.
- **Dedicated Support –**
  Seamless Support, Always.

BENEFITS:

- **Financial Wellness –**
  Help your employees achieve financial prosperity with FIKAA’s investment tools.
- **Value to Company –**
  Maximize growth with FIKAA, financial tools that align with your business vision.
- **Revenue –**
  Unlock new revenue with FIKAA & monetize employee interaction.
- **Security Assured –**
  FIKAA’s secure solutions, keep your platform and employees safe.

Suggestions & Recommendations:

A] Suggestions to Investors / Users-

1) Today’s youth is financial security oriented and is also mobile friendly. If these apps are readily accessible (complying with a proper legal and structural framework), they can also become a target audience and inculcate in them the habit of savings and investment.

2) Women investors, the amount they keep aside from their salaries, house budgets, or family income, they can make investments with these AI-driven apps, as and when they feel and also disinvest when the need arises. This will help them to boost their confidence of meeting their house related financial needs or manage their personal investments and portfolio.

B] Suggestions to AI-driven App Developers-

3) There are abundant availability of AI-driven apps for portfolio management. Through different surveys, advertisements the approved and permitted apps should be popularized. Exposure through e-newspapers, social media sites should be given so that maximum reachability will be achieved, resulting in more usage.

4) It is observed that in these AI-driven apps, limited heads of products such as mutual funds, share trading, digital gold are available. The traditional investment options such as banking products, post office schemes, other government schemes should also be made available, which will attract varied users and investors towards these apps.

C] Suggestions to Government -

5) The government institutions must display the approved and permitted apps on banners, hoardings, public transport vehicles across the geographical areas, whether urban or rural, similar to other initiatives like Make in India, Sukanya Samriddhi Scheme, etc., which will help in creating not just awareness among the users but also will help them to gain confidence, regarding safety and security, to use these apps.

6) The government can create an upgraded and fast-moving redressal system for addressing to the concerns, rules and regulations, laws and procedures for smooth functioning of these AI-driven apps. This will encourage more aspiring investors to make use of these apps and by adopting these strategies create a sense of safety and security and boost up the financial and portfolio management sector.

Conclusion:

Many corporates are undergoing changes required to adapt to digitalization and AI. The key role played by AI is helping corporates and organizations to provide tailored customer engagement, provide safer and efficient products which will enhance the growth of overall investors whether male or female and also the portfolio maximization sector.

Men and women may have faced difficulties related to accessibility, information of financial services in the past, AI will prove to be beneficial to investors due to its increased affordability and accessibility, leading more investors managing their portfolio at the optimum level and becoming financially stable and independent.

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